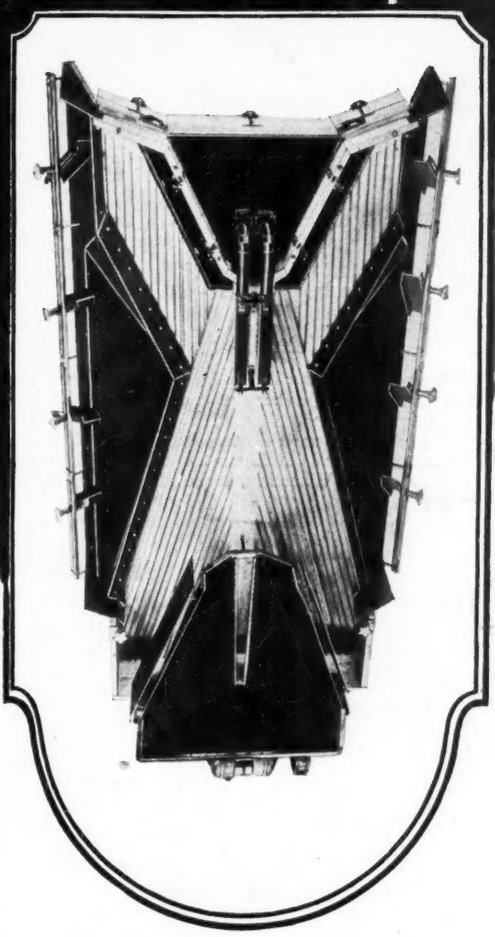

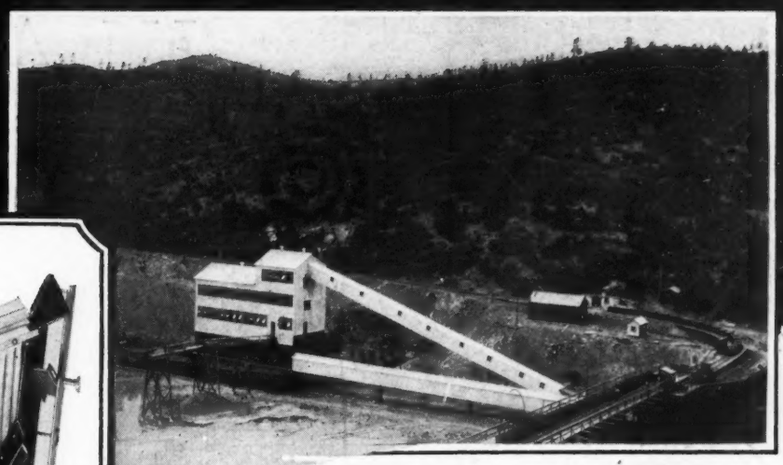

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and double capacity with the Y Type Separator

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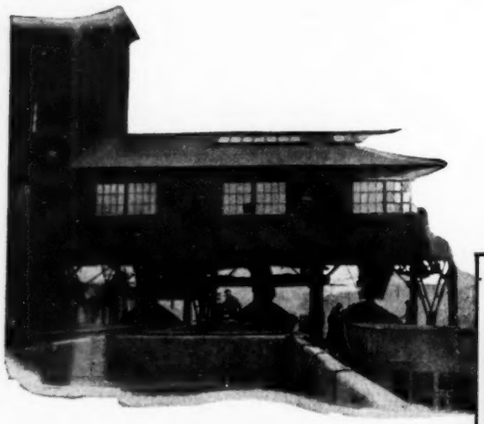
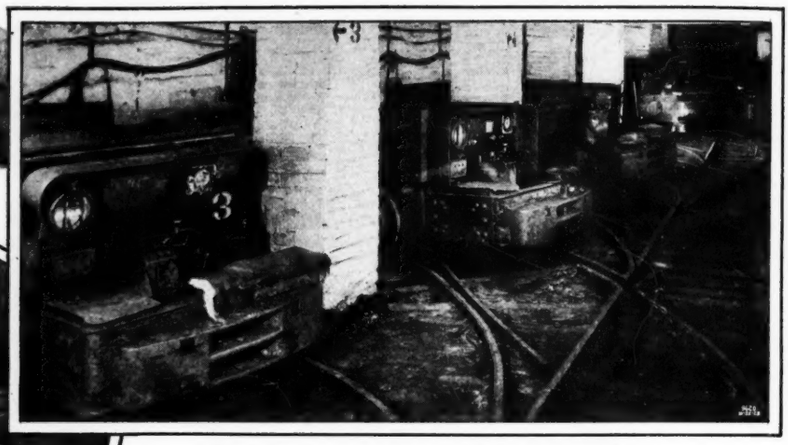
Efficient

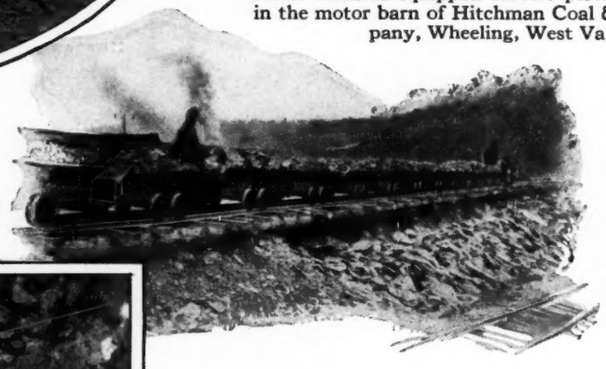
ON CHARGE *as well as* IN ACTION



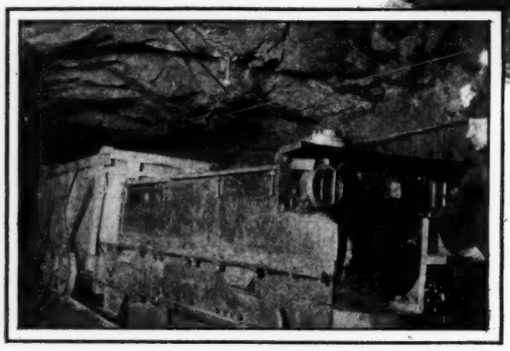


If you've never seen an Exide-Ironclad Battery on charge, you've a pleasant surprise in store. It takes current in quickly, easily and with little waste. The Exide-Ironclad-equipped motors pictured here are in the motor barn of Hitchman Coal & Coke Company, Wheeling, West Va.

There won't be any waiting for these empties at the face, for the motor is powered by an Exide-Ironclad, and the great speed of this battery hustles the cars in and the loads out with no delays. Furthermore, the speed of this battery holds up well all day long.



The last trip of the day is out, bringing with it extra cars of rock and all the miners that could crowd on the motor. Yet the motor has power to spare, for it has an Exide-Ironclad in the battery box. This battery always has extra power in reserve when extra power is needed.



Rugged as the rock roof above is the battery in this motor. That battery is an Exide-Ironclad, built by a company that has been making storage batteries for thirty-eight years. Is it any wonder that an Exide-Ironclad stays on the job year after year without needing repair?

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Exide Batteries of Canada, Limited, 153 Dufferin Street, Toronto

Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, June 10, 1926 — *Number* 23

COAL AGE

With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
R. DAWSON HALL, *Engineering Editor*

Next Week's National Coal Association Issue

Coal Age has Sydney A. Hale covering the National Coal Association Meeting at Chicago. Next week the issue will be largely devoted to the meeting and to the various articles that were delivered there.

The National Coal Association deals with some of the most vital problems of the coal industry, and the program which it has prepared on this occasion touches those vital matters in their most important phases. Engineering problems are fundamental, but so also are those which appertain to the direction of business and of industry.

Coal Age, as usual, will cover the meeting adequately, as you will note when you open next week's issue.

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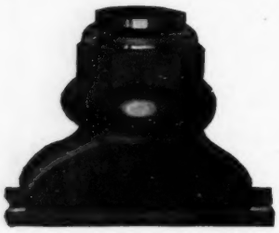

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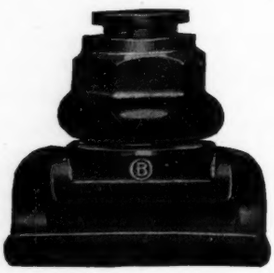

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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 | NEW YORK, JUNE 10, 1926 | Number 23

Holding Down the Peaks

IN MINING and other plants that operate on purchased current, peak loads carry a strong penalizing charge. The monthly peak thus has almost as much influence on the power bill as does the actual consumption of current. The high points, or excessive demands, therefore, should be avoided by all means possible.

Certain industries that have a highly fluctuating load and a peak that can be foretold with a fair degree of accuracy have found it advantageous to install internal combustion engines of the Diesel type that can be started promptly and which will shoulder the load in excess of a certain predetermined quantity.

At the mines the maximum demand usually develops about 8 a.m. and begins to fall off sometime before noon. At some operations a secondary peak makes its appearance at about 3 p.m. and subsides within about an hour. In both of these cases an auxiliary source of power could be advantageously employed to keep the demand upon the central station within reasonable bounds, or such that heavy demand charges would be avoided.

In addition to its use in alleviating or lessening the demand charge, and which results in some industrial cases in savings sufficient to pay for the equipment in from 3 to 4 years, such a unit would always be available as a standby in case of power failure on the line. A unit of this kind can be started quickly and should logically be made of such power as to be capable of operating the fan and material hoist in case of emergency. It would thus serve as a standby as well as an auxiliary.

It would probably be quite possible to so arrange a unit of this kind that it could be started and stopped automatically. It would thus come into operation whenever the load reached a certain predetermined amount and would be stopped when the load had fallen to some other pre-established lower level. Such an arrangement would not only prove ideal from the standpoint of peak-load avoidance, but would furnish a ready source of energy in case of power failure or on idle days.

Evading Acid

FOR MANY of his pump-, pipe- and screen-corrosion troubles the mine manager can largely blame himself because he has not learned as yet how to protect from the pollution of water that he has to remove from the mine. If he creates a storage place for water in the mine he will do well to remove all slack and loose coal before turning in the water, because the slack inevitably contains a quantity of pyrite which oxidation in the presence of water will turn to iron hydrate and sulphuric acid.

The tendency today is to limit electric load peaks by shifting the pumping load to the night and to arrange immense storage spaces against floods, but if the old rooms are full of slack there will be increased cost in the repair of all pumps and pipes. Too often the rooms chosen for such storage have been abandoned for years and cannot safely be cleaned, and the water has to be dammed back to such a height, in order to reach all parts of the territory, that it rises high on the coal and procures acid from the ribs.

Where it is possible it is best from an acidity standpoint to pump water in a single lift thus reducing its opportunity to take up acid along its path.

"Eating Their Heads Off"

TOO MANY MINING executives the words "obsolete" and "worn out" appear to be synonymous. This may or may not be the case, but probably in the majority of instances equipment, tools and appliances become obsolete long before they are worn out. In any good museum may be seen numerous articles that are, to all intents and purposes, exactly as serviceable today as when they were first constructed hundreds or possibly thousands of years ago. A stone mace, for instance, might crack a skull just as efficiently now as in the days of the Pharaohs, but who would think of attempting to rout a burglar from his home with such a weapon when he has every reason to believe that that intruding individual will be armed with a modern automatic pistol?

One of the chief reasons why this country has forged ahead of its competitors in manufacturing is because it has consistently and persistently thrown perfectly good machinery on the scrap heap. Thus a manufacturing lathe might be capable of lasting for 20, 30 or even 50 years and do just as good and accurate work at the end of that period as at the beginning. At the termination of the first decade, however, the probabilities are that such marked improvements will have been made in the design of machines of this kind that one that is 10 years old can be operated only at a loss. In other words it would be far cheaper to sell the old, albeit perfectly serviceable machine, for junk and buy a new one than to continue its operation.

And what is true of such machines as lathes in a manufacturing plant often is true of production machinery at the coal mine. During the past few years such improvements have been made in boilers and power-generating machinery in general, that many pieces of equipment that were installed only a comparatively short time ago and were at their installation justly considered efficient, are today obsolete in the sense that it would be cheaper to scrap them and install newer and more up-to-date apparatus. The ever-increasing consumption of energy resulting from the mechanization of mining processes formerly performed by the muscles of men or animals makes this only the more advisable.

The sickle and flail are unquestionably just as efficient agricultural implements today as they ever were but they are seldom used because they cannot compete with the self-binder and the threshing machine. Cheap as these devices are, because of the muscular energy that must be expended in their use, they are obsolete and discarded. Although just as efficient as ever were they to be used today they would, figuratively, "eat their heads off." The same is true of many other pieces of equipment in all industry, mining included, which, because of the onward march of progress, have gone, are going, or are doomed to go the same road.

Because of this obsolescence, therefore, every progressive mining official may with wisdom periodically ask himself the question: "How much longer can I afford to operate this or that particular piece of equipment?" If the conditions and possibilities involved are carefully weighed some executive might be surprised at the proportion of his equipment that would find its way to the scrap heap to be replaced by newer and more efficient machines. Many an old engine, boiler, coal cutter and the like, although in perfectly good condition and capable of rendering years of service, is in reality "eating its head off."

Stronger Than Statutes

THE ORGANIC ACT creating the Bureau of Mines gives that agency of the federal government no mandatory powers over the operation of the coal mines of the country. In the light of the Supreme Court ruling that mining is not interstate commerce, any attempt to vest such authority in the Bureau would be open to challenge on constitutional grounds. And yet, in certain directions, the Bureau of Mines exercises a control more potent than probably would be possible under a specific statutory grant of authority.

The Bureau of Mines determines what explosives may be used with safety. It pronounces judgment upon this and that type of equipment. In the course of its studies to make the mining of coal a less hazardous occupation, it condemns this practice and sets the seal of approval upon that—and its recommendations are written into the laws of certain coal-producing states. Even where state laws are silent upon the practices indorsed by the Bureau, there are few operating officials of coal-producing companies who care or dare to run counter to the seasoned opinion of the Bureau's staff.

Whence comes this power? How is the Bureau of Mines, lacking authority itself, able to establish and maintain its control? Public opinion is the answer. As an independent, non-political, technically-trained organization, the Bureau of Mines has enlisted public confidence in its work. Because of that public confidence, its leadership in the safety movement is unquestioned. Manufacturers of explosives and mining machinery strive for its indorsement. State mine inspectors, coal-operating officials and their subordinates seek to keep within the lines of the Bureau's recommendations as assure protection against public censure in the case of accidents.

No one will deny that the industry is better for this co-operation. Voluntary in its inception, public opinion makes that co-operation more compelling, more binding, more effective than direct Congressional mandate. The success which has attended the Bureau's endeavors ought to impress itself upon our national law-makers. Industry, too, will be blind to its own best interests if it does not recognize the value of massing public opinion in its favor by showing a willingness to co-operate in voluntary movements for industrial betterment. The industry which is backed by public opinion need fear no threats of repressive regulation.

Roof Control

NO ONE CAN fail to realize that the study of roof action and control always will be troubled by elements of uncertainty but that is true of kindred studies. The kinetics of beam and plate action under stress is none too clearly understood, though the study has in years past made wonderful progress. The analysis of roofs and girders is hedged with assumptions which we know are too often incorrect. Nevertheless they afford solutions that are indicative of the true conditions and therefore are of value if not wholly reliable. Despite assumptions and uncertainty the stresses in dams are also calculated.

But with all the difficulties apparent and hidden in the problems involved, engineers have not hesitated to theorize, and the results are so much better than guesses that no one would design a bridge, a dam or a girder or place a beam without them.

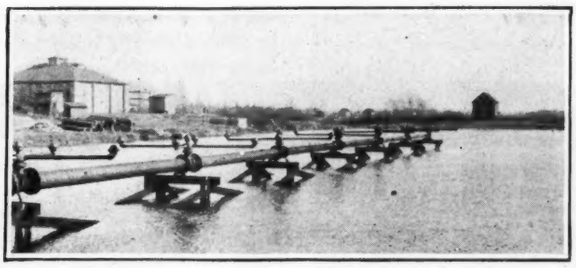
The problems of the roof are greater, but theories, mathematical studies and tests are of more value than vague surmises. Erratic conclusions that may be readily proved fallacies are the necessary outcome of not sitting down resolutely to make certain assumptions and argue mathematically from them.

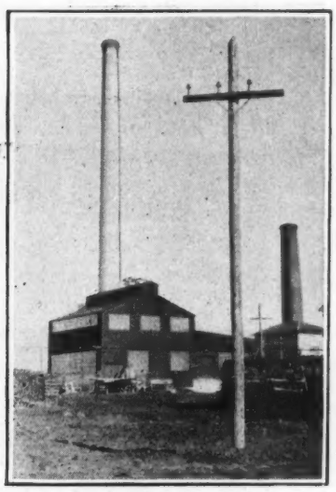
We shall find that the roof is not what the assumptions would make it; we shall discover that there are exceptions where the measures slide readily on each other or are badly creviced, or faulted, or subjected to preliminary strains, thus confounding our theories.

Our trouble is that we declare that a solution of the problem is impossible and refuse to attempt it. Yet when we begin to operate we assume not merely the conditions on which a solution of the problem might be approximated but the final result. We make not one or two assumptions but several and those less nearly correct than those we have refused to make.

One assumption that lies at the basis of all reasoning regarding the roof is that it is a monolith except for two main layers that lie above and below the central mass respectively. The bottom layer is the drawslate, the top layer, the surface material. Now, it is to be admitted that there are often uncertainties as to the monolithic character of the mid-roof, but our trouble is to break a strong roof, not a weak one, so if we assume that the mid roof is integral we get a safety factor, which is what we sometimes need.

In any event by assuming a monolithic structure we make a start. We discuss, at least, one type of roof; in the parlance of the street "we get down to cases." Later we can take up the exceptions. Meantime we clarify our ideas. Our study of roof action today is altogether too nebulous. One man has a good roof, another a bad roof and what is meant by good or bad no one knows. There are different kinds of goodness and badness and a good roof at one time is a bad roof at another. Such vague terms cannot profit anyone. Only analysis will afford an adequate terminology.



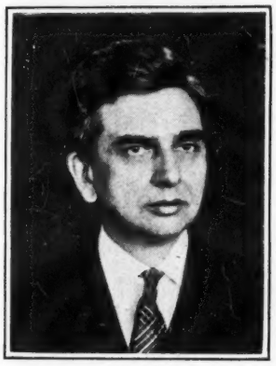


Three Illinois Mines Generate Their Own Power

Install Three Water-Tube Boilers Each Capable of Producing 700 Hp. and Two 1,872 Kva. Generators Driven by Direct-Connected Condensing Steam Turbines

By E. Steck

Mine Equipment and Service Bureau,
Chicago, Ill.



E. Steck

THE Indiana & Illinois Coal Corporation operates a mine at Nokomis, having a capacity of 6,000 tons, and two at Witt, one with a capacity of 3,500 tons, and the other with a capacity of 2,500 tons per day. These mines are known as Nos. 10, 14 and 12 respectively. No. 10 mine is completely electrified and purchases power from a central station. Nos. 14 and 12 purchase power for operating motor-generator sets, for underground electrical equipment and generate their own steam for hoisting and miscellaneous use.

The boiler plants are typical old-style mine plants, using mostly 150-hp. return-tubular boiler, with no attempt at consistent engineering layout for boilers, piping, water treatment, buildings or coal and ash handling. Naturally the quantity of coal burned is excessive and the costs of maintenance and operation are heavy.

The cost of purchased power for No. 10 mine became especially burdensome, due partly to the mine only working part time during the last few years. In 1923, the coal company used 1,655,400 kw.-hr. at a net cost of $56,837 or a charge of 3.43c. per kw.-hr. That year the run was irregular and power consumption low.

A study was made as to the cost of power, part purchased and part generated, and also what would be the cost of producing it at the company's own central station. The investigation showed that a large saving would be effected by the company building its own central station and abandoning its boiler plants at mines Nos. 12 and 14. In view of the future development of the properties and the present operating conditions, it was decided to locate the plant at mine No. 12 and to transmit power to mines Nos. 14 and 10, a distance of approximately 10 miles.

Steam for No. 12 mine will be supplied by the new plant, but at mine No. 14 there still remains a steam hoist which must be electrified before that boiler plant can be shut down. Labor released at mines Nos. 12 and 14 will be more than sufficient to operate the new plant. Little more coal will be burned at the new power plant to operate all three mines than was used formerly at mines Nos. 12 and 14 alone.

A track hopper near the shaft of mine No. 12 takes screenings direct from the tipple or from a hopper-bottom car from one of the other mines in case No. 12 is shut down and by means of a reciprocating feeder delivers it to a belt conveyor which discharges into a screw conveyor over the coal bunker. The coal bunker is made of steel and has a capacity of approximately 125 tons. From the bunker the coal is delivered by swinging spouts to hoppers that feed the chain grates.

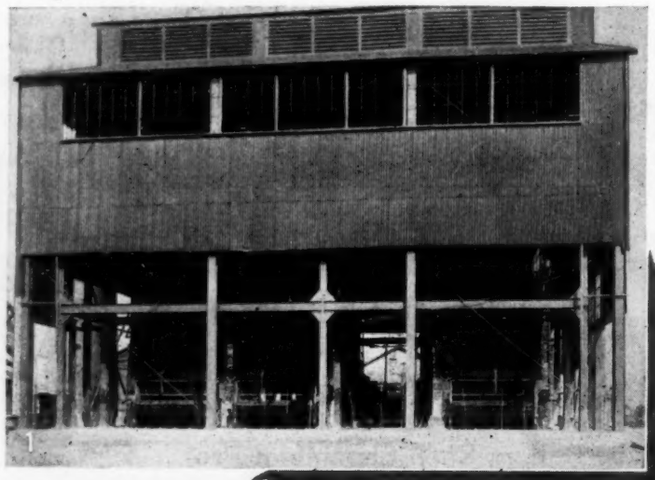
Adequate Indicating Equipment Used

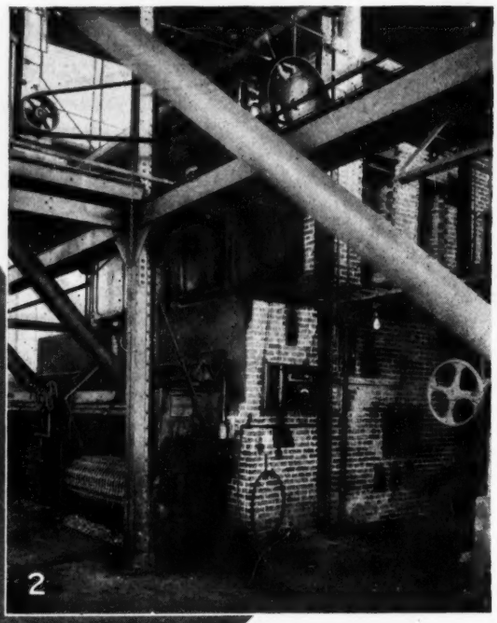
Three water-tube boilers having normal capacity of 353 hp. and maximum capacity of 700 hp. each have been installed, each having two drums 36 in. in diameter and 21 ft. 9 in. long and 175 straight tubes of 4 in. diameter and 18 ft. long. The boilers are equipped with flow meters, carbon-dioxide recorders, draft gages, pyrometers and regulators for the feed water and dampers. Steam is generated at 175 lb. and delivered to the header with 100 deg. of superheat.

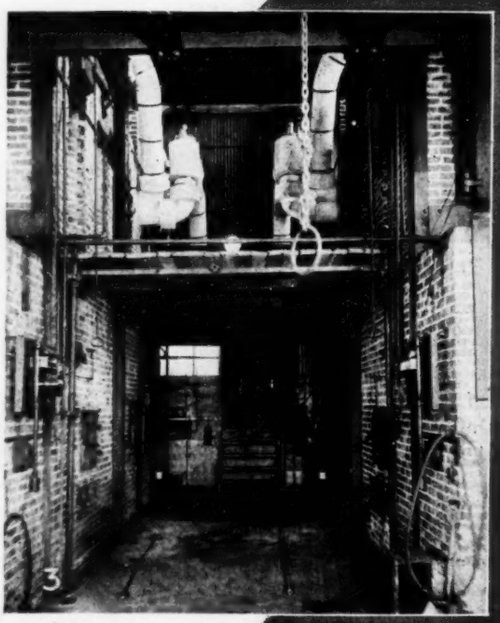
From the chain grates the ashes are discharged into concrete hoppers and thence into ash cars under the boiler-room floor. These are drawn out and emptied on the mine property.

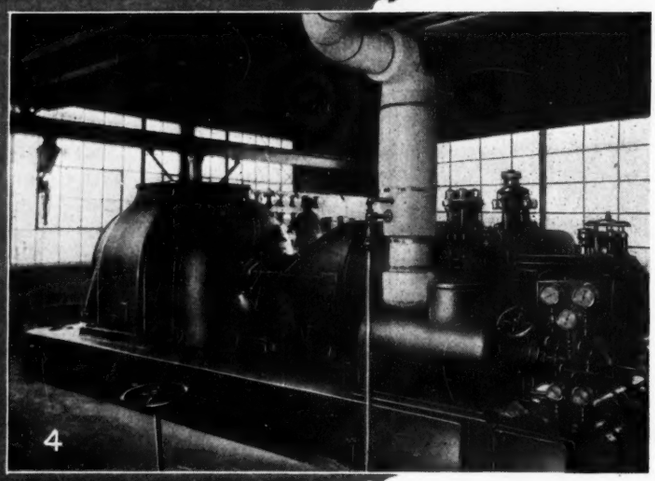
A water-softening plant was erected, consisting of

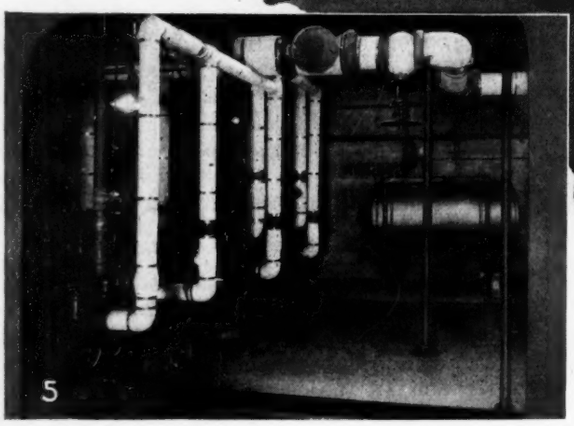
The headpiece shows scenes at the Witt power house. On the left is the conveyor for transporting coal from the track hopper to the coal bunkers in the boiler room. In the center is the spray pond, and the third illustration is of the boiler room and turbine house, the latter being on the extreme right.

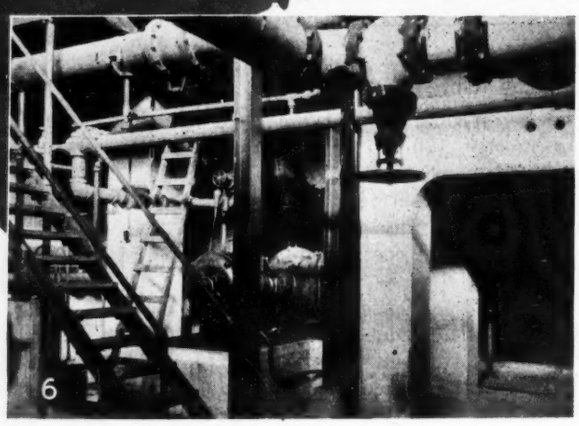












Scenes in the Boiler House of the Indiana & Illinois Coal Corporation

(1) Front of boilers before building was finished. (2) Spray pond. (3) Aisle between boilers. (4) Turbines. (5) Pumps. (6) Turbine foundations and condensers.

a feed-water heater, filtering and chemical tank, supply pumps and a meter proportioner which supplies a fixed proportion of chemical to the water, no matter what the demands are on the plant.

Two boiler-feed pumps, 10x6x12-in. duplex, equipped with pump governors are located in the condenser room basement under the water-softening plant thus giving them a considerable suction head. The exhaust steam from the pumps, exciter turbine and air ejector is used for heating the feed water in the water-softening plant.

An air compressor, electrically driven, is installed for operating boiler-tube cleaners and air tools and for cleaning the electrical equipment.

The chimney 202 ft. 6 in. high is made of re-inforced concrete and lined with radial brick for a distance of 50 ft. with an inside diameter at the base of 11 ft. 5 in. and at the top of 8 ft.

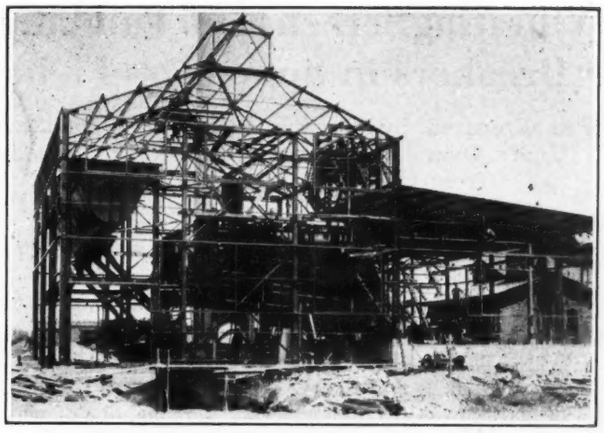
The prime movers consists of two 1,875-kva., 3-phase, 60-cycle, 2,400-volt generators driven by direct-connected condensing steam turbines operating on 175-lb. steam pressure and 100 deg. superheat. A 35-kw. turbine-driven exciter is furnished to supply excitation to the two turbo-generators and to supply power for the station lights in case of emergency. Additional space is povided in the turbine room for a smaller unit to be installed later to take care of the night and idle-day load. Both condensers are of the jet type, one being equipped with a two-stage steam-air ejector, and the other with an air pump.

Abundant Water Supply Is Provided

A pond is located near the power house which is used for both boiler-feed water and for operating the condensers. Water from the pond is taken by gravity through a concrete basing with removable screen and settling chamber to cold wells in the condenser room, whence the condensers lift it by short suction lines. A pipe line is run from the washhouse tank for priming the condensers. The discharge water from the condensers is taken back to the opposite end of the pond from the intake water to a concrete basin which overflows into the pond. The pond level is below the condenser discharge so that little power is taken by the discharge. A centrifugal pump is located at the afore-mentioned basin which is connected to the spray system for cooling the water. This cooling system is independent of the condenser discharge which permits operating the sprays in the summertime at night when the turbines are shut down and shutting them down in the winter time when they are not needed.

The switchboard consists of two generator panels, one exciter, two 2,300-volt feeders, and one 440-volt distributing panel. The generators and feeders are supplied with recording wattmeters which record the power delivered by each generator and furnished to each mine. Each generator panel is supplied with an alternating- and a direct-current ammeter, an alternating voltmeter, an indicating wattmeter and a non-automatic oil switch. The 2,300-volt circuits each have an oil circuit breaker and recording wattmeter. Both turbines have motor-driven synchronizers, with control switches on their respective generator panels. On a swinging bracket is a synchroscope and a power-factor meter.

A bank of three 75-kva., 2,300/440-volt transformers is used to supply power to the motors in use at the power plant such as condenser drives, compressors, pumps, conveyors, etc.



Witt Power House in Process of Erection

Bunkers, boilers and ash pit can be seen to the left of the illustration. The boilers have a maximum aggregate capacity of 2,100 hp., the normal capacity being 1,059 hp.

Mine No. 14, which is less than a mile away, is operated by a 2,300-volt transmission line, and No. 10, which is about 9 miles distant, by a 23,000-volt line. For operating No. 10 mine there are two transformer substations, delta-star connected, each consisting of three 667-kva. transformers, one at the generating end, and the other at the receiving end. Each transformer station is equipped with high- and low-tension disconnecting switches, air-brake switches, lightning arresters, high-tension expulsion fuses and choke coils.

The engine room for a height of 3 ft. and the boiler room for a height of 7 ft. above the ground level is constructed of reinforced concrete, and the remainder of the building is steel-frame construction and sided with asbestos-covered corrugated-steel siding. Steel window sash is used with wire-ribbed glass in the lower sashes, plain glass being used in the upper windows. The water-softening plant is built of reinforced concrete up to floor level, the upper part being of concrete block with steel sash. The turbine foundations are built entirely of reinforced concrete. The plant, except the brick work in the chimney and boilers, was built by men at one time connected with the coal company.

Savings Will Depend on Running Time

The cost per kilowatt-hour for generating power at the new plant depends on many elements entering into the cost, that is, the efficiency and care with which the plant is operated, the cost of repairs and depreciation and the working time of the mine. In making a comparison with the purchased power, it should be remembered that the plant will not only replace this power but will furnish steam to Mine No. 12, which will abandon its power plant and eventually supply additional electric power to Mine No. 14, which will also shut down its boiler plant.

Making no allowance for savings in maintenance, coal and labor in these old plants, the new power station will show a reduction in the power costs of from $20,000 to $50,000 per year over purchased power, depending on the running time of the mines. This saving is greatly increased by shutting down the old steam plants, so that this new power plant will pay for itself in from three to six years. After the plant has paid for itself, the cost of producing power will be further decreased. The plant was designed, built and put into service in 1925 by the Mine Equipment & Service Bureau, of Chicago, Ill.

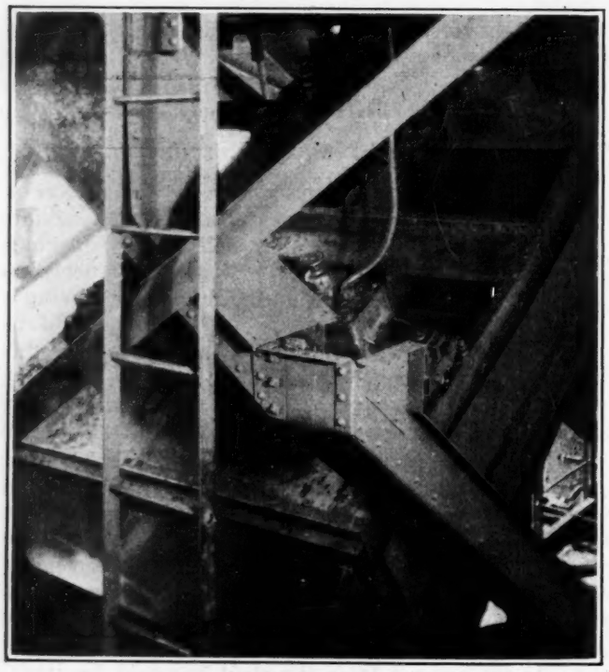
Vibrating Screens and Tumbling Breakers in Smokeless Field

Pea Prepared by Passing Slack, One Inch and Under, Over a Vibratory Screen—Rock Cleaved from Coal by Mechanical Means

DURING the past winter a substantial market developed for bituminous coal of pea size, especially for smokeless fuels. With proper equipment low-volatile coal of this grade can be utilized as successfully for domestic heating as for steam raising.

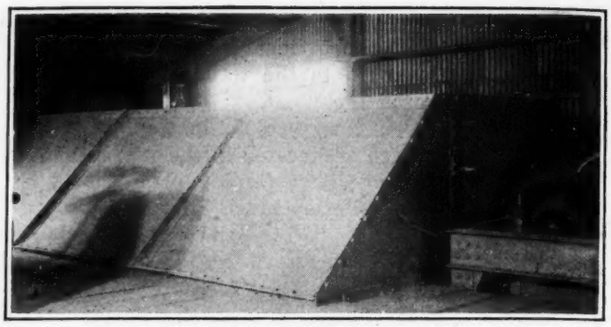
At the new tipple of the Crozer Coal & Coke Co., Elkhorn, W. Va., pea coal from the Pocahontas No. 3 bed is prepared over Hum-mer electric screens, one of which is shown in the accompanying illustration. The installation in this tipple consists of two single-deck screens, each 6 ft. long and 4 ft. wide. These are placed in tandem on a slope of 30 deg. The screen unit thus formed takes a feed varying in size from nothing to 1 in. From this it separates all coal over ½ in. It is capable of handling this material at a maximum rate of 25 tons per hour. The tipple is provided with facilities for loading upon only four tracks, and accordingly pea coal is elevated to a 220-ton bin, which holds a day's supply.

At the mine of the Upland Coal & Coke Co., adjoining the property of the Crozer company and operating under the same management, the tipple is likewise equipped for the preparation of pea from Pocahontas No. 3 coal. At this plant, however, a 4x6-ft. Arms vibrating screen with ½-in. perforations is used for this purpose. This screen is horizontal and is supported from below. It receives its feed from a Marcus reciprocating screen, which prepares the larger sizes. The pea coal which passes over this Arms screen, as well as the slack going through it, is sent by chutes to railroad cars direct.



Tandem Vibrating-Screen Unit Removes Fines

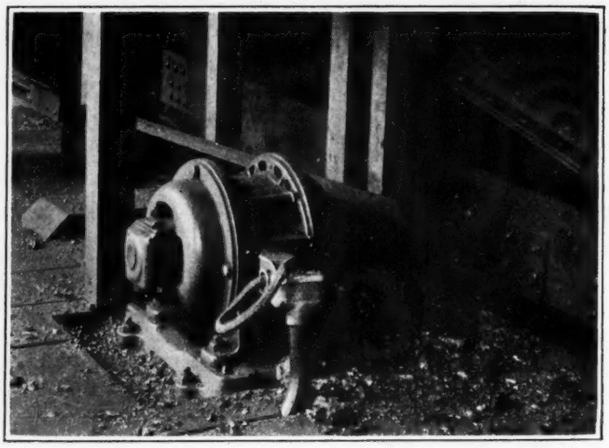
This shows the fine-coal screens in the Crozer tipple. The tandem unit, which is electrically driven, separates coal less than ½ in. in size from the slack screened out by a preliminary process. The capacity of this unit is approximately 25 tons per hour. The screen is set on a 30-deg. slope.



Tumbling Coal Breaker in Upland Tipple

Within the housing is a 9x11-ft. breaker which separates good coal from adhering but worthless bone and slate. Lumps composed of these two materials rejected from the picking table are fed to this machine. This saves the pickers from wasting time in cleaving the coal by hand from the bone.

Both of these tipples are equipped with Bradford breakers, which separate the high-quality lump coal from the bone and rock adhering to it. This machine handles the reject from the picking tables. A bone binder sometimes attaining a thickness of 3 in. occurs slightly above the middle of the coal bed. It is not the practice in these mines or throughout the adjoining fields to separate this bone from the coal at the working face. In the past it has been customary to lift lumps of combined coal and bone from the picking tables and cleave off as much good coal as time would permit. As a result of this practice much coal, as well as bone,



Vibrating Screen, Upland Coal & Coke Co's Tipple

This screen is horizontal and is installed under the main reciprocating screen. Over it ½x1-in. pea coal is prepared. It is driven by a 3-hp. motor.

was relegated to the dump. The time consumed in cleaving the bone by hand seriously lessens the ability of the pickers employed on the tables to prepare a large tonnage daily.

The practice now followed at the picking tables of these companies is to cleave off only the coal that separates readily from the bone. The residue or lumps of combined coal and bone which cannot be readily separated are fed into the Bradford breakers. These machines convert the coal into slack and reject the bone. The Crozer tipple is equipped with a 9x14-ft. breaker having a capacity of 50 tons per hour, and the Upland tipple has a breaker 9x11 ft. in dimensions.

F. FRASER MACWILLIAM'S name was incorrectly given as F. Fraser Williams on page 707 of the issue of May 20.

Company Store Run by Better Business Methods Lowers Costs and Gives Improved Service

Good Salaries Paid to Really Competent Men Who Know How to Turn Stocks Rapidly and Free from Spoilage

By Louis Spilman
Editor, *Industrial Retail Stores*,
New York City

BUSINESS IS business and welfare work is welfare work, but when a combination of the two results is good for both—that is a paradox. This, however, has been the result of the gradual development by coal-mining companies of retail stores to serve their employees. At the start, coal-mining companies were forced into the retail mercantile business in order to supply their employees with the necessities of life. This was due to the isolation of the mines and to the reluctance of independent capital to invest in stores located in these communities.

These early retail units, which were termed "commissaries," were not in any way progressive stores, but merely units that carried such items of food and clothing as were necessary to meet the general demand of the miners and other employees. As the managers of these commissaries were not experienced in store operation, the usual result was a tremendous overstock of inferior goods which were sold at high prices.

COMPETITION DOES NOT HINDER

The profit which accrued from the enterprise, nevertheless, was sufficient to call the attention of the mine operators to the fact that a large revenue could be secured through this division of their business. With competition developing, however, due to the rapid rise of the mail-order house, the building of a great system of hard roads, the growth of bus systems and the wider distribution of automobiles, thus giving access to larger cities, coal operators were face to face with the proposition of making one of two decisions: They must either end their mercantile operations and permit independent capital to care for the demand, or they must re-organize their stores on modern, progressive principles of merchandising, which would enable them to meet any competition offered.

The headpiece shows the butcher's shop at the Lynch store of the United Supply Co., a subsidiary of the United States Steel Corporation, Lynch, Ky.

The decision in most instances has been to develop the stores, and it has been found, that, as the commissary has given way to the modern retail unit, managed by an experienced personnel, stocked on a scientific basis and merchandised in the most approved and modern system, not only was the service to the employee better, the prices offered much lower and the qualities presented higher, but the net profits to the company itself were as great, or in most cases, even greater. As a thorough realization of the advantages to be gained by operating retail stores on modern principles became apparent, increased opportunities for the development of the stores were given.

Perhaps the greatest single step forward has been the absolute divorce of the mercantile enterprise from coal production. In Pennsylvania, this was made necessary some forty or fifty years ago, when the state passed a law prohibiting the operation of retail stores by industrial organizations.

This law is, of course, not necessary now so far as the coal industry is concerned, for there has been no recent evidence of the existence of the evils that brought about the passing of the early law. Today we find the majority of the coal companies in every state have separated these two functions, law or no law; either separately incorporating a mercantile department or conducting it as a distinct and independent section of the existing business.

The profit derived from the store, however, was not the only consideration which prompted the operators to develop these retail merchandise establishments to their present high standard. Labor, at certain periods, such as, for example, during the World War, became extremely scarce and the actual wage alone was not the sole consideration which caused the workman to become a permanent fixture in a particular community. During such times it was necessary to create within the laborer confidence in the company for which he worked and to surround him with an environment that tended to create contentment and satisfaction.

As the miner, or members of his family, visited the store daily, the company found that its largest opportunity to create confidence and to spread contentment was to give a square deal at the store. The prices and qualities had to be such that they would bear a favorable comparison to those offered by competing stores in nearby towns.

FIGURES OF OTHER COMPANIES AS GUIDE

This development in the store field has brought many problems to executives of coal companies. What should the investment be in merchandise? What should the cost of business be? What should the net profit be, if any? How many store employees should there be? What convenient system of credit for company employees can be utilized? What percentage of the total mine payroll should a company expect to be spent at the store? These are a few of the questions that have confronted the coal-company executive, since he began to realize the importance of a store to the satisfactory operation of a mine.

The only fair way to arrive at a conclusion on any of these questions is to find out how some of the successful coal-company merchandise units are operating and what their figures are. Let us turn first to the largest operators of coal-community stores in the United States, the Union and the United Supply Co., with headquarters at Pittsburgh, Pa., which operate seventy-one stores in Pennsylvania, West Virginia and Kentucky, in communities established by the H. C. Frick Coke Co. and the United States Coal & Coke Co.

The Union Supply Co. was incorporated as a separate organization in 1882, and the United Supply Co. was incorporated in 1902. The headquarters for both these groups is the same, and J. W. Anawalt is president of both corporations. The general offices are at Pittsburgh, where in addition to Mr. Anawalt, are the other general executives of the companies, including Frank Walton, general purchasing agent.

The Union Supply Co. operates sixty stores and has its general store headquarters at Uniontown, Pa., with C. L. Steiner in charge as general store superintendent. The United Supply Co. operates eleven stores, among which is the remarkable unit at Lynch, Ky., under the store management of John C. Howard. The general store headquarters for the United Supply Co. is at Gary, W. Va., where Claude Boughner serves as general store superintendent.

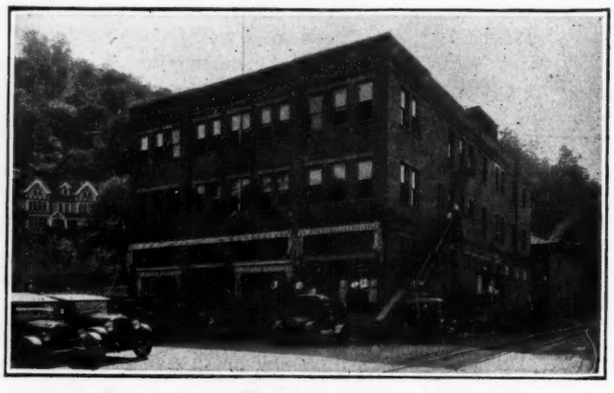
For the purposes of this survey, the two companies are considered together, and, as they are really under one executive jurisdiction, this can be done satisfactorily.

When you come face to face with the fact that this organization, only one of the many merchandising organizations developed during the past few years to serve coal-mining communities, has an average of 900

IN preparing this article for *Coal Age*, Mr. Spilman surveyed 101 coal-community stores located in various sections of the country. Here are some of the outstanding results of his survey:

Number of stores surveyed	101
Average store stock carried	$21,837.21
Average annual sales	$164,797.91
Average turnover	7.5 times
Average number of store employees	11
Average per cent of company pay roll spent at store	32.62
Average business other than company employees	9.4
Average salary of manager per month	$205.95
Average cost of doing business	13.95 per cent
Of this	
The average salary cost was	9.5 per cent
The average delivery cost was	1.07 per cent
The average rental cost was	0.83 per cent
The average advertising cost was	0.23 per cent

The rest of the 13.95 per cent is distributed in lesser amounts over a varied number of items.



Company Store of Island Creek Coal Co., Holden, Logan County, W. Va.

The coal company has its offices in this building. The superintendent's house is on the hill to the left. Stores are unloaded from the railroad, the Chesapeake & Ohio, on the right. Note the paved streets. It is an easy run from Holden to Logan, but the Holden store holds its own nevertheless.

employees, carries an average stock investment of over a million and a half dollars, and does an annual retail business of around twelve million dollars, you begin to understand why this branch of coal-mining company activities has taken on such an important aspect; anyway that's what the Union and United Supply companies are doing.

ONE THIRD DO A CASH BUSINESS

About 30 per cent of this business is for outright cash. The remainder is done on charge accounts extended to employees of the coal companies, who assign their earnings as collateral. Most of the business, of course, is done with the coal-company employees, but some of the stores, such as the one at Lynch, Ky., draw as much as 10 per cent of their business from people of the adjacent countryside, who are in no way connected with the coal company.

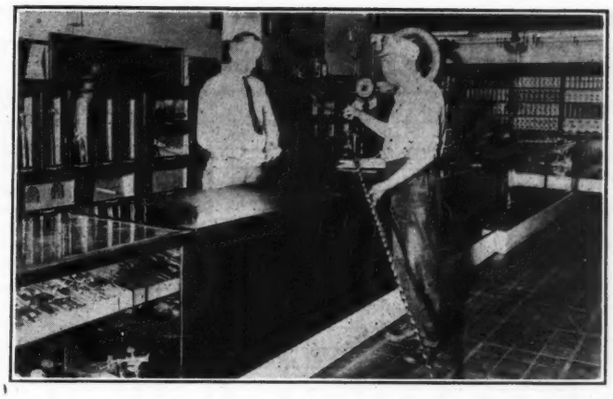
As to the matter of expense, the Union and United Supply companies made figures that would challenge many nation-wide chain-store organizations to equal. It costs them 15 per cent to do business and 10.37 per cent of this goes for salaries and wages. Their supplies cost them 2.5 per cent and delivery 1.2 per cent. They have discovered that to operate successful stores they must offer a fair wage to the store manager. Hence, the average salary paid Union and United Supply companies' store managers is $235 a month. In addition to the actual cash salary, the manager is, of course, given a discount on his merchandise and enjoys extremely low rent.

Grocery Department of an Illinois Mine Store

Over the counter may be seen the cash-carrier system. Order and neatness is the rule of the store. New goods, well displayed kept clean and moving. What a contrast to the older days!

Some coal-company executive will say, "Yes, all these things are very well for an organization of such size, but our company is small. We can have but one store, so there is little chance for us to compete with the nearby city stores or to expect to offer our employees any particular inducement as to price or assortment through our merchandise department."

All we have to do is to turn to the Garden Coal Co., at Tazewell, Va. This company has one store, carrying an average stock of $8,500 and doing about $100,000 business a year, which is an excellent turnover indeed. They have four store employees. Twenty per cent of their business is outright cash, and the remainder is done on credit extended to employees of the coal company. About 15 per cent of their total business is done with people other than Garden Coal Co. employees.

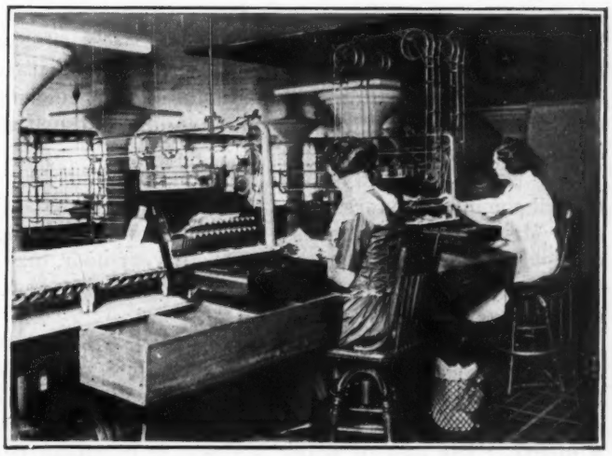


Another of Lynch's Store Departments—This for Hardware

Show cases give an opportunity to tempt trade. The spick-and-span appearance has its value not only in making sales but in forbidding the keeping of dead stock. With no place to put it, every one tries not to get stock that will not sell.

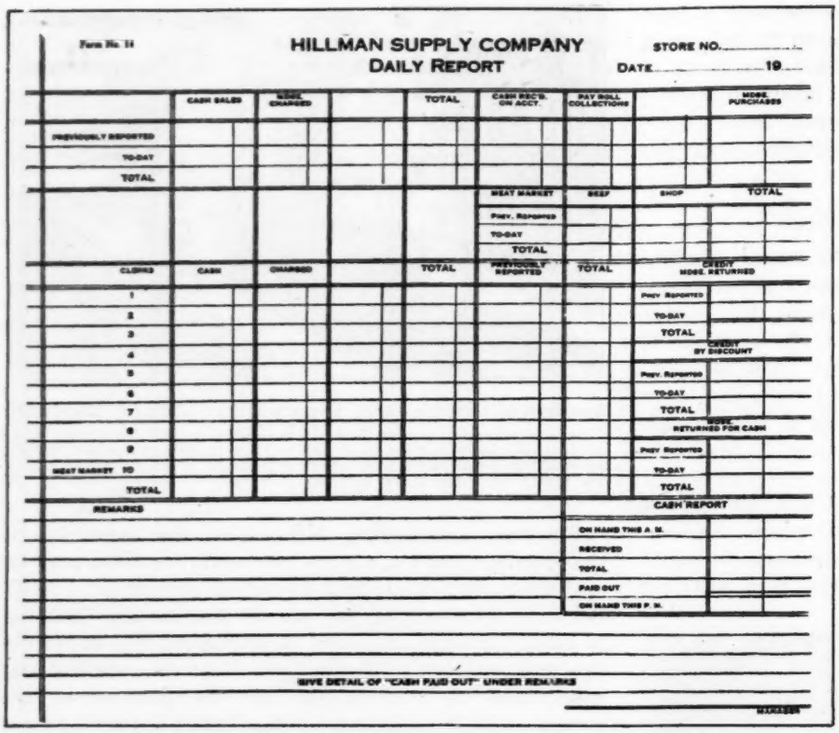
The two outstanding facts about the operation of the Garden Coal Co.'s store that disprove what may be said about the single-unit operation, are these: (1) 42 per cent of the total payroll of the Garden Coal Co. is spent through the store, so evidently, the employees are well satisfied with the type of service, quality and assortment of merchandise and the fairness of the prices. (2) It costs the Garden Coal Co. just 6.19 per cent to do business, showing that the overhead of the small store does not necessarily eat it up. In fact, R. O. Van Dyke, secretary-treasurer of the Garden Coal Co., says that the officials of the company look on their store with great favor, in reference to net profit, as well as to the service rendered company employees.

Many companies find it necessary to operate three, four or five stores for the benefit of their men. In West Virginia are two examples of coal companies of this kind; the Lillybrook Coal Co., at Lillybrook and the Kanawha & Hocking Coal Co., at Longacre. The Lillybrook Coal Co. operates three stores and carries about $100,000 worth of stock, and does a business of about a million dollars. Its cost of doing that business is 9 per cent of the gross turnover. Fifty to fifty-five per cent of the coal company's payroll is spent at the store and 20 per cent of its business is done in cash. Figures to be proud of indeed!



Cash-Carrier System at United States Coal & Coke Co. Store, Lynch, Ky.

This building is fitted up like a city department store with every facility for display and for operation. The cash-carrier system shown above saves steps and makes it possible to keep a record of every transaction as made.



HILLMAN SUPPLY COMPANY
DAILY REPORT

STORE NO. .....
DATE ..... 19 ....

	CASH SALES	MDSE. CHARGED		TOTAL	CASH REC'D. ON ACCT.	PAY ROLL COLLECTIONS		MDSE. PURCHASES
PREVIOUSLY REPORTED								
TO-DAY								
TOTAL								

			MEAT MARKET	BEER	SHOP	TOTAL
			Prev. Reported			
			TO-DAY			
			TOTAL			

CLERKS	CASH	CHARGED		TOTAL	PREVIOUSLY REPORTED	TOTAL	CREDIT MDSE. RETURNED
1							Prev. Reported
2							TO-DAY
3							TOTAL
4							CREDIT BY DISCOUNT
5							Prev. Reported
6							TO-DAY
7							TOTAL
8							MDSE. RETURNED FOR CASH
9							Prev. Reported
MEAT MARKET NO							TO-DAY
TOTAL							TOTAL

REMARKS

CASH REPORT

ON HAND THIS A. M.	
RECEIVED	
TOTAL	
PAID OUT	
ON HAND THIS P. M.	

GIVE DETAIL OF "CASH PAID OUT" UNDER REMARKS

MANAGER

How the Hilman Supply Co. Keeps Track of Day's Sales

This enables the manager to see how much every clerk has sold both for cash and on charge accounts; also to keep account of returned merchandise whether charged or sold for cash.

The Kanawha & Hocking Coal Co. has four stores. It carries about $80,000 worth of stock in these stores, and during the first nine months of last year did just a wee bit under a half million dollars' worth of business. Its cost of doing business was 9.4 per cent. This company departs from the prevailing method of compensating store managers, in that it pays an average monthly salary of $160 and gives, in addition to this, 5 per cent of the net profits made by the store. Both the Lillybrook Coal Co. and the Kanawha & Hocking Coal Co. issue metal checks to the miners for use at the store as a convenient method of supervising credit.

Leaving the eastern and central fields in order to get an even broader outlook on store activities in coal communities, let us examine the records made by the Union Pacific Coal Co., which operates six stores with headquarters at Rock Springs, Wyo. E. R. Jefferis, manager of stores for this company, says that it is his endeavor to maintain the standards for efficient operation recommended by the outstanding authorities in the merchandise field.

"We realize that the isolated location of the majority of coal community stores is no longer a business asset," says Mr. Jefferis. "Instead, the automobile and the catalog have brought competition to our very door, making it absolutely essential that we offer quality merchandise at competitive prices."

The Union Pacific Coal Co. carries from $200,000 to $225,000 stock and does a business of from $900,000 to $1,110,000 each year, employing about fifty men.

The average salary paid the store managers is $230 a month. The cost of doing business is about 15 per cent, 7 per cent of which is for salaries and wages, including delivery costs. Twenty per cent of the business done is for outright cash, and the issuance of coupon books as a medium of credit, cares for the remainder. Approximately 25 per cent of the Union Pacific Coal Co. payroll is spent through the store.

On the Pacific Coast, the Pacific Coast Coal Co., employing union labor exclusively, operates four successful stores. They carry a little less than $100,000 worth of stock and last year did $558,156 worth of business.

E. F. DeGrandpre, manager of miscellaneous operations for the Pacific Coast Coal Co., supervises the store developments and maintains an efficient and concise survey of the store activities. Its figures are exact in every instance and are given here in detail. For instance, the company knows that 13.9 per cent of its business is for cash. It knows that 3 per cent of the business is done with people not connected with the coal company in any way whatsoever, and that the rest of the business is done through the medium of credit, as represented by coupon books issued in denominations of $2, $5 and $10, charged to the customer's account. It knows that 25.24 per cent of the Pacific Coast Coal Co. payroll is spent at the store, which is a fair percentage.

The cost of doing business is 14.34 per cent, and this is less than it was ten or twenty years ago. Mr. DeGranpre attributes this decrease to four causes: Improved methods of handling, increased volume of business, greater experience, and the standardization of merchandise. Its cost of doing business is so well divided that it is given in its entirety in Table I.

Table I—Distribution of Operating Costs, Pacific Coast Coal Co.

	Expenses Chargeable to	Per Cent of Business Transacted
A.	Salaries (excluding driver)	7.82
B.	Deliveries	1.38
C.	Fuel	0.22
D.	Store supplies and expenses	1.30
E.	Coupon books	0.11
F.	Repairs and renewals of buildings	0.51
G.	Losses	0.09
H.	Other expenses	0.05
I.	Depreciation of buildings	0.44
J.	Manager of stores and clerks	0.53
K.	Insurance	0.19
L.	General office salaries and expenses	0.75
M.	Taxes	0.30
N.	Rent	0.65
	Total	14.34

The item of rent is given as 0.65 per cent. No rent is paid as the company owns its own building, this figure merely being the amount set aside as a return on the investment in the building.

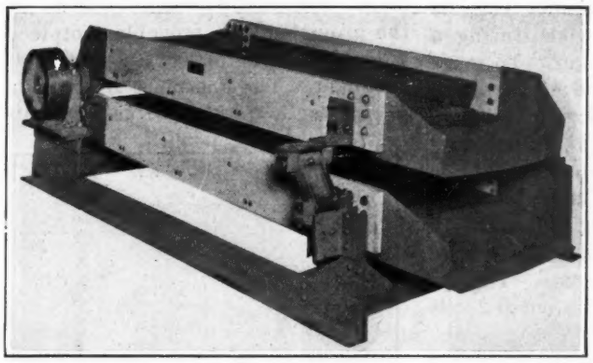
The investment required in merchandise, equipment and buildings to conduct the coal-community stores merits the close attention of the coal-company executive to the problems with which the stores are confronted. Just glance at these figures on the company-store business: There are about 7,500 of them in the country, distributed through coal and metal mining, lumbering and general industrial communities; they serve a population of seventeen million; they employ 100,000 people; and in bulk of business done the stores rank high in the retail distribution field.

Other Exhibits at Mining Congress Exposition

Shaking-Screen Family Has Enlarged During Year Past — Car Height Being Lowered to Meet Shovel Needs—Powder Men Seek to Meet Stray-Current Menace—Gas Detector—Drills and New Bonds

By Frank H. Kneeland
Associate Editor, *Coal Age*

NEAR THE entrance to the exhibition hall the Roberts & Schaefer Co. of Chicago had on exhibition its new Arms shaking screen. This consists of two decks of screen cloth mounted on wooden frames and supported at one end by the driving eccentrics and on the other by short rocker arms. As ordinarily used this screen is inclined at an agle of from 3 to 5 deg.



Shaker Screen

Two decks of screen cloth are superimposed in the Arms screen. The eccentric driving head is fitted with ball bearings. The motion imparted facilitates screening action.

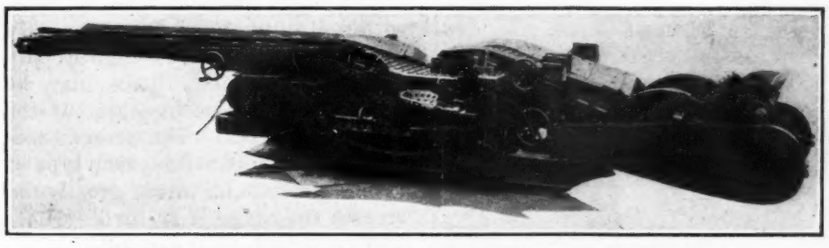
Because of the peculiar motion imparted to the screening surfaces this device is said to be highly effective and capable of breaking up a bed of material and agitating it uniformly so as to permit the undersize to pass through. The head is mounted on ball bearings and the machine operates at approximately 500 r.p.m. requiring from 3 to 5 hp. to drive it.

When installed in conjunction with air-cleaning plants, this screen provides a conveying action which helps to distribute the coal to the required points. When double decked an opportunity is afforded for providing the lower deck with the finer mesh of screen cloth, thus multiplying the screen area for the fine sizes, or those requiring the most screening surface.

Out in the "side show" tent in the rear of the building the Myers-Whaley Co. of Knoxville, Tenn., had one of its new 2-25 shovels in operation. The first machine of this type was put to work last September in a mine in Pennsylvania where it has been successfully employed in entry work ever since. The machine shown in Cincinnati was the second one of this kind ever built.

It is 39 in. high overall from the rail. This is the traveling height and for operation the machine requires 42 in. for the proper discharge of the shovel. It weighs 13,000 lb. It can be equipped for any track gage, from 20 in. upward. Its length is 23 ft. 10 in., width overall 5 ft., including the operator's platform, or 4 ft. 6 in. when this platform is removed. The shovel cleans up a space 17 ft. in width. A 15-hp. motor is employed for driving this machine and its capacity is 34 cu.ft. of loose material per minute.

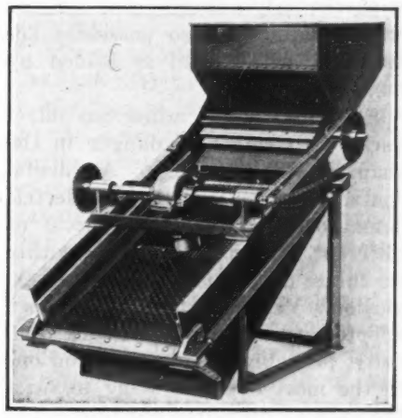
Several changes from previous designs have been embodied in this machine. Thus the motor drive is through a triple roller chain operating in a closed case. The drive to the rear conveyor is by a spline shaft with universal joints instead of by means of a long chain. Naturally other changes have been made but these are the most important.



With This Loading Machine Only Low Headroom Is Required

This shovel is the second of its model ever built. It will operate in a headroom of only 3½ ft. and may be traversed in 3 in. less space. Several refinements in design over previous types have been incorporated in its construction.

Especially for treating the smaller sizes of coal vibrating screens are being extensively employed in place of the older and better known shaker screens. The Kanawha Manufacturing Co. of Charleston, W. Va., exhibited its new Kanawha Vibrator,

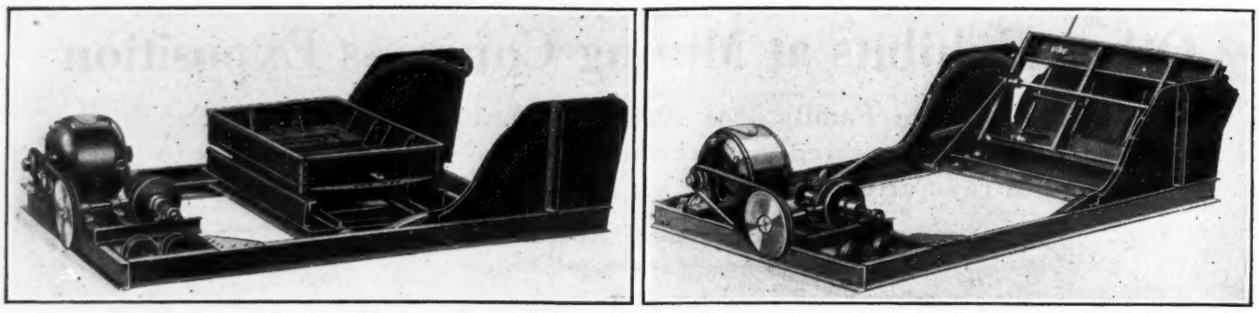


Vibration Assures Effectiveness

Either a belt or direct connection to a motor may be employed for driving this Kanawha vibrator. The inclination of the screen surface and the speed of the drive may be varied to suit local requirements or to afford maximum capacity.

which it is claimed may be successfully used for screening any material that will pass through a wire cloth. It is particularly suited to the smaller sizes of coal, either wet or dry and ranging in size from 1½ in. downward.

This firm also exhibited a model of its sidehill dump intended for refuse disposal. This device is a self-contained unit capable of discharging any type of car, but particularly adapted to those having "solid ends" such as are normally discharged in a rotary dump. As may be seen in the accompanying illustration, the car in its extreme position is several feet to the side of the refuse track. It is thus unnecessary to move this dump frequently and when a move



Any Kind of Car Can Be Dumped by This Mechanism Which Is Made for Sidehill Refuse Disposal

Although any kind or type of car may be handled by it, it is primarily intended for dumping those having solid bodies. The car is turned almost completely over and as it is moved several feet transversely the dump need be transfered only infrequently, making it possible to keep the track nearer the body of the rock pile where the grade is easy to maintain and where there is less likelihood that a sudden slide will take the dump and the track down the hill. The trouble with the dumping of rock is that track and dump have to be taken onto the uncertain ground at the edge of the rock pile necessitating frequent regrading, and the placing of rock by hand. This disadvantages is obviated by this mechanism which is well away from the pile's edge.

becomes imperative the frame may be skidded to its new position in a short time.

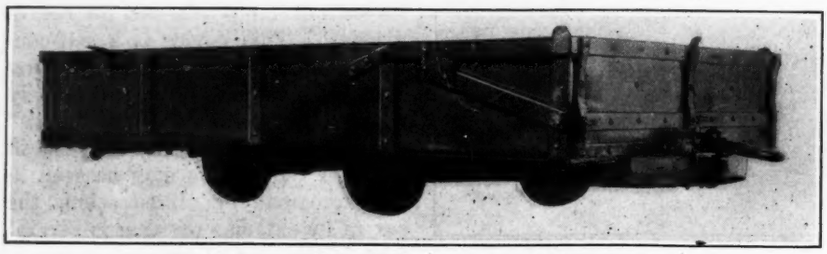
Low cars are becoming the vogue. The Watt Mining Car Wheel Co. of Barnesville, Ohio, exhibited a car of this kind that was designed primarily to secure large capacity and low height. Though this type of car is particularly advantageous for machine loading it also possesses advantages where coal is loaded by hand shovel.

Electrification of mines has introduced an element of danger in the shape of stray currents. Accidental contact between the wires of electric detonators and any two objects of different electrical potentials within the mines may cause a premature explosion. Various schemes have been adopted for overcoming this difficulty, probably the simplest and one of the most effective being to twist the ends of the wires together. The Hercules Powder Co. of Wilmington, Del., however, has introduced a spring clip spanning the ends of the wires. This makes a positive contact between these two conductors beyond the insulation. When short circuited in this way tests with a 550-volt power line have fused the wires at the point where they were connected by the clip without setting off the cap. It is claimed that this clip affords positive protection from stray currents. It may be removed with the fingers leaving the wires clean and straight ready for use.

Many operators consider the old flame safety lamp as constituting a possible source of danger. To overcome this difficulty and at the same time obtain results comparable to those afforded by it, the Concordia Electric Co., of Pittsburgh, Pa., is introducing a new gas indicator. This device depends for its operation upon the power of a platinum sponge to absorb inflammable gas. The detector is equipped with a small 2-volt dry-electrode battery.

When the current is so regulated that the wire upon which the spongy platinum is deposited will just glow perceptibly in pure air, it will be found that when placed in a mixture of air and gas this wire will be heated to redness. Its glow will increase as the relative proportion of combustible gas to air increases and when a 10-per cent admixture is attained the wire will become white hot.

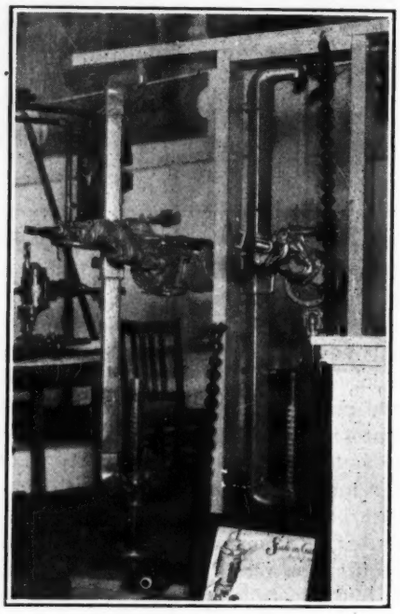
This device measures $5\frac{3}{4}$x$2\frac{3}{4}$x2 in. and weighs approximately 2 lb. 2 oz. It is claimed that it constitutes a convenient, reliable and accurate means for determining the gas content of mine air without the use of a flame of any kind. Furthermore, tests may be made with it by almost anyone, the skill required being small compared with that necessary for the manipulation of a safety lamp.



Car Is Low, Wide, Strong and of Large Capacity

This car was designed primarily for machine loading, but is excellently adapted to hand-loading as well. It stands only 28 in. above the rail and is over 6 ft. wide inside, so that shoveling into it is easy and its capacity is large even though no chunking is done.

The Chicago Pneumatic Tool Co. showed an improved type of post drill. The improvement consists of the provision of a movable footpiece with both a ratchet and a screw adjustment. The footpiece or tube is of hydraulic pipe with notches fitting a pawl. Inside this pipe is a screw provided with a hand wheel—or in this case a "foot wheel." This improvement permits drilling holes within 4 in. of the roof or floor. By digging the fixed spur slightly into the top or bottom, holes may be drilled within 2 in. of either of the cap or foot rock. The present machine is provided with a new type of reversible switch, which greatly increases the range of the drill. Holes may be drilled at any angle.

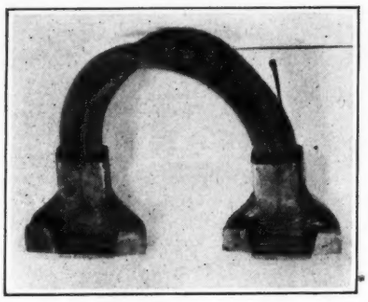


Improved Post Drill

Improvements on this machine consist of the top and bottom spurs and the switch controlling the motor. The arrangement is such that holes may be drilled within 2 in. of either top or bottom.

The Penn Machine Co. showed a new type of short stranded bond intended for installation under the

flange of the rail. An angle bar is placed on one side of the rail and a fishplate on the other. The hooks of the bond terminals are slipped over

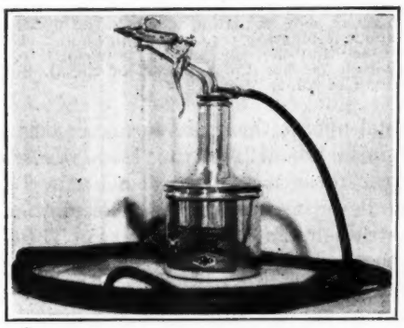


Short Rail Bond for Welding to Rail

When in place this bond is comple ely protected from injury. The terminals may be pushed over the flange of the rail and form a mold for the copper weld. Application is thus easy and rapid, and the bond is entirely below the rail out of harm's way.

the edge of the flanges on the fishplate side and pushed or driven to place. This holds the bond in position while it is being welded to the rail. As may be readily seen this bond is thoroughly protected, being entirely below the rail flange and out of harm's way.

Templeton, Kenly & Co., Ltd., of Chicago, exhibited a type of jack for pulling mine timbers. This machine was designed originally for telephone use, that is, for tilting or moving poles. Inasmuch as it may be used for pulling quite as readily as pushing, however, it makes an excellent post puller. For this purpose, it is anchored at one end and a chain from the post to be pulled is hooked

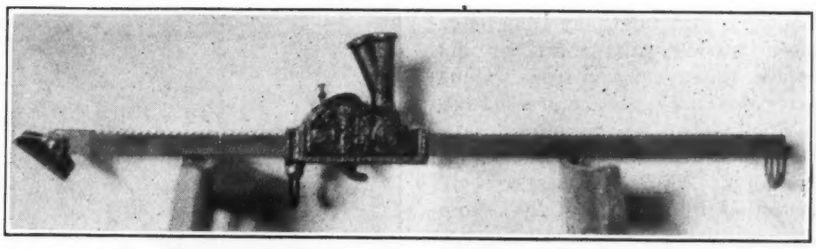


Handy Paint Spray Gun

This gun holds 1 qt. of paint but larger sizes may be obtained. With this outfit a man can cover several times as much surface as he is able to cover without its aid. Furthermore the paint is shot to place and intricate surfaces are little if any harder to paint than plain ones.

to the jack head which is then traversed along the ratchet bar.

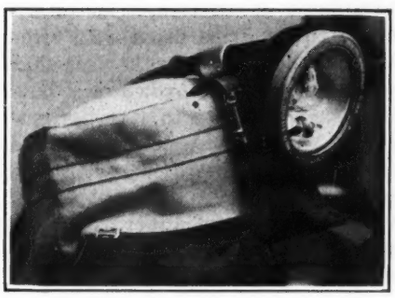
Painting at the average coal mine requires periodic attention. The Simons Paint Spray Gun Co., exhibited a small paint gun that should find favor at the larger mines at least. This new gun consists of an aluminum container of 1 qt. capacity



Puller Suited to Use in Recovery of Mine Posts Under Pressure

Designed primarily for telephone work, for the lifting or tilting of poles, this jack is finding application as a post puller within the mines. For this purpose it is amply strong yet light enough to be readily carried from place to place.

provided with a friction top to which the spray nozzle is attached. After filling, it is only necessary to give the top a few light taps with the hand to fasten the cover firmly in place. Air for this gun is supplied by a small compressor driven by a ½ hp. motor that may be attached to any light socket. The compressor and air tank or receiver may both be mounted on a hand truck that can be readily moved anywhere. It is claimed that with the aid of this machine a man will cover from 6 to 8 times as much area as he would be able to cover by hand methods.



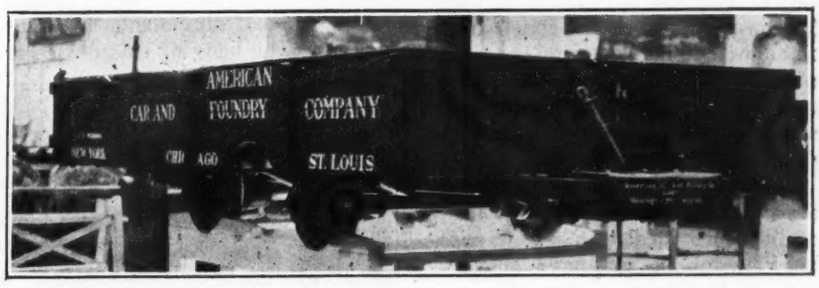
More Comfortable Cap Lamp

Note the bracket by which it is attached to the cap. The lamp has a less leverage upon the wearer's head and is held more firmly than usual.

The Koehler Mfg. Co. showed its improved Super-Wheat lamp. This lamp like its predecessor is provided with two bulbs, but one is of higher power than the other and affords much more light than the lamp it replaces. The most recent improvement, however, consists in the bracket by which the reflector is fastened to the cap. As will be observed this bracket is shorter than the old one and is stiffened by means of ribs or corrugations that are rolled into the metal. This makes the lamp much firmer on the cap and reduces its leverage on the head of the wearer. Incidentally, the illustration shown was made from a photograph taken by the light of another lamp of the same kind as that photographed. This well demonstrates the light-giving power of the new lamp.

In one of the accompanying illustrations may be seen the new composite type of car built and exhibited by the American Car & Foundry Co., in the construction of which are incorporated several details that decrease its weight and lengthen its life. Thus the drawbar is a plate or strap that is forged in a U-shape and inverted with the opening of the U flanged outward forming a bearing for the edge of the floor planks.

Under the outer edges of these planks are the flanges of the bottom plates. These floor plates extend first outward, then upward the thickness of the planks, then outward to the sides of the car where they are again flanged upward affording connection to the side boards. In cross-section each plate is thus a Z terminating at one end in an L. With the belts and other ironing an extremely rigid construction is afforded. All iron work is riveted and the planks are bolted in place. Any

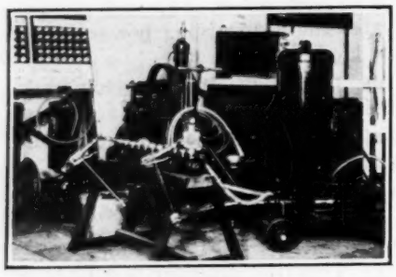


Low Car of Large Capacity Suited for Mechanical Loading

Small height above the rail, large capacity and ease of repair are the cardinal virtues claimed for this car of composite construction. To decrease the necessary headroom the wheels are let into the car floor and housings over them forged into the plates.

woodwork that fails may thus be replaced without disturbing or disconnecting any of the irons. Housings over the wheels are pressed into the floor plates.

Greasing cars has always been considered a kind of "necessary evil" about the mines. One of the accompanying illustrations shows the new grease gun exhibited by the Lincoln Steel & Forge Co. This machine is small in size and may be used either as a piece of portable equipment or installed permanently. The outfit consists of a motor-driven air compressor, an air receiver, a grease tank, the gun proper, the delivery hose and the nozzle. The grease reservoir on the gun holds 50 lb. of grease and the machine is arranged to discharge a predetermined weight of this lubricant each time the nozzle trigger is pulled. Ordinarily about ¼ to ½ lb. of grease is thus delivered under pressure. The nozzle may be



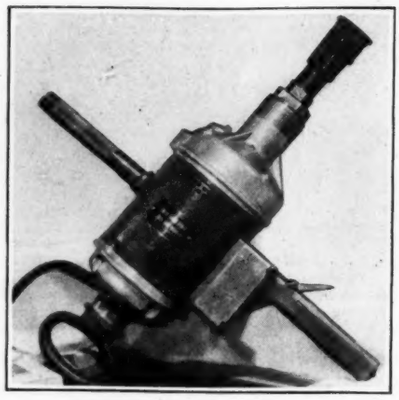
Power Car Greaser

A ½-hp. motor will drive this machine. The grease tank will hold 50 lb. of lubricant which is forced into the bearings under heavy pressure.

of several types, the latest being one that needs only to be pushed against the grease plug of the wheel and held there as the grease is discharged.

The Simplex Wire & Cable Co., of Boston, Mass., exhibited its new selenium-rubber covered cable. This is a mechanically strong rubber covering which the company claims will wear 50 per cent longer than any compounds it formerly marketed. It is called a 60 per cent selenium-rubber armor, meaning that it contains 60 per cent pure rubber. Selenium is peculiar in that it is a non-conductor of electricity in the dark, but a conductor in the light. It is sometimes called a non-metallic metal. It costs about $2 per pound as against 4c. for sulphur.

The Cincinnati Electric Tool Co.'s shothole drill exhibited at this show has been provided with a new automatic switch so arranged that release of the trigger stops the machine. This drill weighs 48 lb. and operates on direct current at 250 volts. The new switch is of the quick



Electric Drill for Shotholes

The switch on the right hand grip of this drill was completed just before the Cincinnati exposition. It is so arranged that release of the trigger stops the drill—a valuable safety measure.

make-and-break type so arranged as to be kicked out as soon as pressure of the hand is removed. One objection to power drills fitted with ordinary switches has been the fact that a switch had to be thrown or a button pushed in order to stop the machine. The result was that serious accidents sometimes occurred in case the auger struck a hard substance. In such a case the auger remained stationary and the machine itself revolved twisting up the lead cable and sometimes the operator as well before power could be shut off. The new switch obviates this difficulty and tends towards safety.

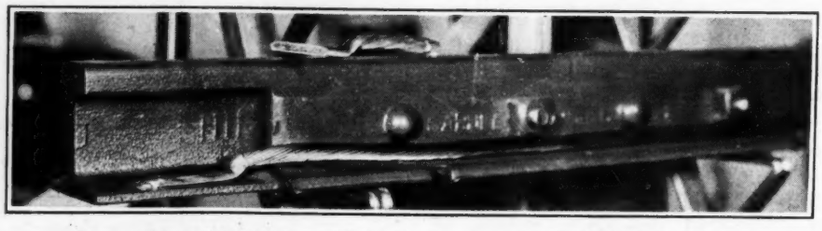
The Electric Railway Improvement Co., showed a copper terminal bond that can be laid in place and copper-welded to the rail without the aid of a form or mold. This is done by means of a special copper electrode, which is a pure copper rod covered with a coating of carbon and silicon, which greatly reduces the tendency of the metal traversing the arc to fly or splutter and makes it possible to weld the terminal to the rail without a mold or form. In practice the two terminals are laid on the two rails and held in place usually by the workman's knee instead of being clamped rigidly in position.

E. I. du Pont de Nemours & Co., showed a small single-shot blasting machine. The body of this device is about 1½ in. in diameter and 5½ in. long and weighs approximately 2 lb. It is fitted inside with a small spring-actuated magneto. A suitable ter-

A Single-Shot Blasting Machine

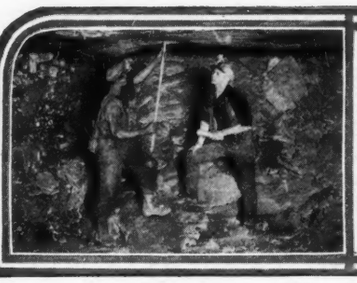
This little machine which may be hung on the belt by means of the swiveling ear at its top furnishes a ready means for firing one shot at a time which is the usual method of blasting coal. It is light and so durable that nobody knows how long it will last. It has the approval of the U. S. Bureau of Mines.

minal upon either side forms a place of attachment for the lead wires. After these have been attached a T handle is inserted in the head of the instrument and given a turn. This actuates a spring, which in turn, drives a small magneto generating enough current to discharge a single cap, igniter or electric squib. This machine has been approved for safety, reliability and durability by the Bureau of Mines.

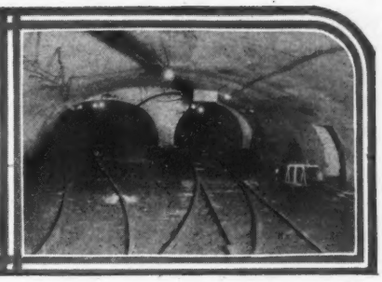


Copper Terminal, Copper-Welded, Can Be Applied Without a Mold

The welding electrode is said to be so made that the molten metal carried by the arc does not splash and splutter in the usual manner. Hence, this bond can be welded in place while being held against the rail by the welder's knee.



Underground Operation



Is the Finest Coal Dust as Hazardous as That Which Is Coarser?

Certain Laboratory Experiments Show That Dust of 15 to 25 Microns Diameter Gives on Ignition Greater Pressures than Coarser or Finer Dusts

Mining engineers have been disposed to regard coal dust as becoming progressively more dangerous as it becomes finer. The U. S. Bureau of Mines has quite generally supported this point of view. And, indeed, it seems almost ill-advised to question the conclusion, because, once questioned, there may be many who will fail to appreciate the fact that though the finest of the coal dust may be relatively less dangerous than that which is coarser it may nevertheless be true that the most dangerous coal dust is that which still may be regarded as exceedingly fine.

PEAK OF EXPLOSIBILITY

Apparently the most explosive coal dust has a diameter somewhere between 15 and 25 microns. Now a micron is 0.001 millimeter. Consequently the dust which is 0.015 to 0.025 millimeter, or about 0.006 to 0.01 in. in diameter is possibly the most explosive of any. Such dust might quite rightfully be termed very fine, in fact impalpable. To get an idea of the size of the particles from 102 to 169 would go side by side and yet only occupy a linear inch. To cover a square inch, imagining them exactly square, 10,332 to 28,674 would be required. As they may be of any shape the square inch would not be entirely occupied by the particles even then.

Say Craig M. Bouton and J. H. Hayner in bulletin 22 published by the Carnegie Institute of Technology, the U. S. Bureau of Mines and the Mining & Metallurgical Advisory Boards conjointly, entitled "Rate of Combustion of Coal Dust Particles: Part II—Effect of Particle Size Upon Pressure Increase Attending Flammation of Coal Dust" (price 50c.):

"It has been generally accepted that the explosibility of coal increases as the fineness of the dust is increased. Early tests conducted by the U. S. Bureau of Mines, in which the portions of a ground dust caught on 20-, 40-, 60-, 80- and 100-mesh sieves, respectively, were subjected to identical tests for explosibility in a large steel gallery, demonstrated the accuracy of this statement for the range of sizes tested.

"Clement and Scholl concluded that 'the finer the dust the greater is its flammability,' and supported their assertion by photographs of the flames produced by the ignition of suspensions of four different sizes of one dust. The same order of explosibility has been shown in tests in the Experimental Mine of the Bureau of Mines."

FINEST DUST NOT THE WORST

This bulletin describes experiments planned to obtain a quantitative relationship between the fineness of dust and its tendency to flare up when suspended as a cloud and ignited at some point. The experiments gave the unexpected result that flammability does not increase indefinitely with fineness but seems to reach a maximum, and then fall off or at least remain constant, as the fineness of the dust is still further increased.

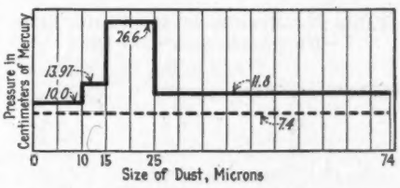
"This result, of course, cannot at this stage be held as valid except for the authors' own experimental conditions. Until further analysis of the various factors which enter into the procedure for obtaining the fine sizes of dust and into the method of testing for flammability, little more can be done than report the methods and results and indicate what seem to the authors to be the probable reasons for the apparent anomaly. In the meantime, experiments are being continued for the purpose of evaluating the various possibilities.

"It may be stated, however, that three possibilities—two chemical and one physical—are being considered in relation to this peculiar reluctance of very fine suspended dust to flame.

"First, it may be a property of coal that, when pulverized, the very fine dust is of a somewhat different chemical nature from the coarser dust, because of a greater friability of some constituents than of others.

"Second, the process of elutriation which suspends the dust in air for long periods, may result in a greater degree of oxidation of the finest particles than of the coarser sizes.

"Third, the very fine dust may tend to agglomerate or form groups of particles so that a cloud of this dust may actually be less completely dispersed in air than a coarser dust."



Shows Relation of Size of Dust to Explosive Violence

For each size in microns is plotted the average pressure in centimeters of mercury for all the tests made on the flammation of Pocahontas coal in the test recorded in Table II. The fact that the mixture of sizes from 9 to 74 microns gives a low result suggests that the mixing of sizes deadens the explosion.

"ELUTRIATION" BY AIR

Perhaps something should be said as to "elutriation." As used by the authors it is the segregation of certain sizes of coal dust by air. Of course, the finer sizes of coal dust cannot be separated by screens. It was observed that with Pittsburgh coal the fixed carbon increases as the fineness increases and the volatile content and ash decrease.

This decrease in the ash and volatile content with increased fineness was not unexpected, because the constituent of coal known variously as fusain, coal charcoal or mother of

coal is extremely friable and of low volatile and ash content and would tend to accumulate in the finest portion of the coal. "On the other hand, the bony and slaty particles are more resistant to pulverization."

"The excess of ash in the coarsest fraction is, probably, also attributable to the presence of the hard mineral pyrite, a supposition which is strengthened by the similar distribution of sulphur." The oxygen is higher in the fractions than in the unsized coal, but emphasis should not be placed on that fact, for the oxygen determination, being by difference, is the most subject of any to errors.

Table I—Analysis of Coal-Dust Samples, Per Cent

Size (Microns)	Fixed Carbon	Volatile	Ash	H	C	N	O	S	Calories per Kg.
Pittsburgh									
Unsized	58.9	37.1	4.0	5.2	80.5	1.6	7.6	1.0	8,017
25–74	57.3	38.6	4.1	5.3	79.0	1.6	8.0	2.0	7,900
15–25	59.0	38.3	2.7	5.4	81.0	1.7	8.2	1.0	8,050
10–15	60.2	37.5	2.3	5.3	81.3	1.6	8.6	0.9	8,061
0–10	61.0	37.0	2.0	5.4	81.4	1.7	8.6	0.9	8,050
Pocahontas									
Unsized	78.3	17.9	3.8	4.4	86.7	1.2	2.9	1.0	8,394
25–74	74.6	19.9	5.5	4.4	84.3	1.2	3.4	1.2	8,130
15–25	74.3	21.7	4.0	4.5	85.1	1.3	4.2	0.9	8,256
10–15	75.6	19.7	4.7	4.4	84.9	1.3	3.8	0.9	8,206
0–10	78.2	18.4	3.4	4.5	87.3	1.3	2.6	0.9	8,394

Table II—Results of Duplicate Tests with Pocahontas Coal Dust

Diameter of Particles, Microns	Pressure Rise Upon Flammation, cm. of Mercury Test A	Test B
0–74	6.6	8.5
0–74	8.3	6.3
0–10	9.6	10.4
10–15	12.3	11.9
10–15	9.2	16.1
10–15	17.8	16.0
10–15	17.5	17.1
10–15	11.8	10.0
15–25	30.4	37.6
15–25	19.9	34.3
15–25	21.1	14.9
15–25	27.0	27.6
25–74	9.7	14.0

Reasonably Consistent

It might be well to give the last of the series of tests on Pocahontas coal, thus exhibiting the degree of consistency of the results and the nature of them. It is noticeable that the 15- to 25-micron coal gives the greater pressure on flammation. The dust from 25 to 74 microns in diameter gives a distinctly lower pressure—only half as great as that of dust of diameters ranging from 15 to 25 microns—and that is true also of the dust ranging from 0 to 10 microns in diameter. The figures given in this series of tests for Pocahontas coal have been averaged for each size and plotted so as to make the relation of the values more obvious. This the bulletin does not do, possibly because there is some slight possibility that such a graph might be misleading as not giving the values for any given size but for the range of sizes. If we knew what the values for any particular size actually were the graph might be somewhat different.

Slowly Yields Under Weight Like Wood Prop

Roof support always is a perplexing problem in mining work. Steel and concrete timbering for many years have gradually been taking the place of many of the less permanent wood posts and sets formerly employed. In either of these materials 3-piece sets may be readily constructed, but the simple steel mine prop appears to be far more difficult to fashion.

Hails from the Sarre

In the Sarre region, Charles Gascard, a well known mining engineer, has devised and put into use the prop shown in the accompanying illustration, which is taken from the *Colliery Guardian*. This shows the prop both extended and collapsed. In construction this prop is extremely simple, being composed of two similar pieces of H-beam clipped together so they can slide one upon the other by means of the clips *a* and *b*. Near the upper end of the bottom section and encircling both pieces is a yoke, *c*, which is fastened to this section of the prop by means of a bolt, *d*, that passes through a slot in the yoke. Along one side of the upper section is fastened a long tapering wood wedge faced with strap iron. A shorter and blunter wood wedge is driven between the yoke and the lower section of the prop. This binds and locks the two parts together securely. If desired, a wood cap piece will afford the needed cushioning effect in the manner shown.

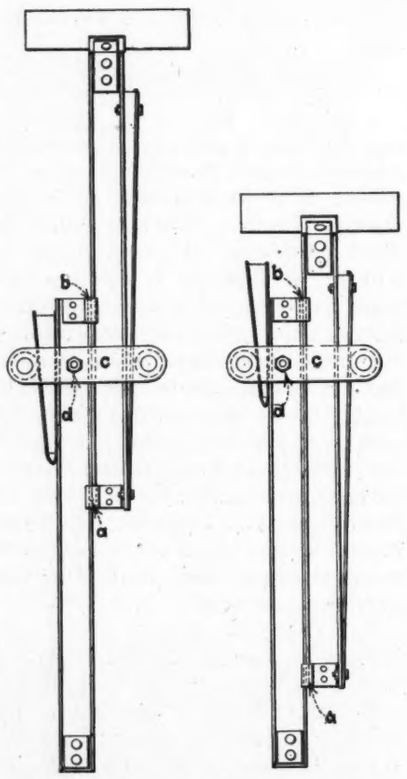
Yields Better Than Wood

When properly set in the manner just described this prop takes weight in exactly the same manner as a wood post under similar conditions. Whereas a wood prop would crush, however, the two parts of this prop slide slightly past each other. This action, however, because of the relative proportions of the two wedges, can take place only under extreme pressure. The prop will continue to support the roof until it has been telescoped in this way for almost 50 per cent of its length.

All mining men will readily appreciate the advantages of such a prop. Sudden falls are avoided, the prop itself lasts indefinitely, actual collapse of the roof is extremely rare and, in most cases, as soon as the superincumbent strata start to "work," movement of the two prop parts upon each other is accompanied by considerable noise, giving ample warning of roof conditions.

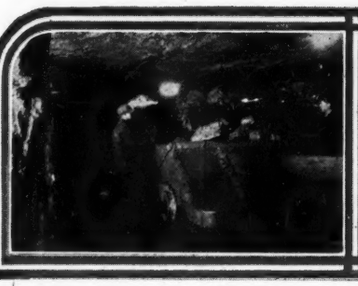
Knock Out Wedge; Use Again

This prop has been made in lengths ranging from 2½ to 13 ft. It was first put into practical use in 1918 and has now been tried in many mines and under widely varying conditions. It is asserted that no roof supports of this kind have been broken or bent in service. Nor have they fallen down when in use. As they are withdrawn by merely knocking out the blunt wedge they can be used over and over again. It is difficult to give actual comparative costs or savings, but it has been estimated that they pay for themselves in one year's use and thereafter return about 80 per cent of their cost yearly.



Takes Great Weight Without Failure

This shows the Sarre pit prop both extended and collapsed. Ready adjustment to height between wide limits, high resistance to collapse and great durability are the chief advantages of this new steel post.



News Of the Industry

Wholesalers Want Positive Policy Instead of One of Negation Only; Statistics, Said One, May Cure All

Toledo, Ohio, June 8.—Determination of the stand to be taken on National Legislation came to the front this morning as the biggest problem confronting the American Wholesale Coal Association which opened its tenth annual convention at the Hotel Secor yesterday. Ira C. Cochran, commissioner, brought the problem home when he announced that a motion to place the Copeland bill before the Senate Monday had been defeated by only two votes.

Mr. Cochran made this statement in the course of a review of the legislative situation. There were, he said, three schools of thought on the question. One group opposed all legislation as dangerous and unwarranted. This position was supported by a line of resolutions adopted at preceding conventions. A second group found nothing objectionable in the Parker bill now before the House Committee on Interstate and Foreign Commerce. A third group agreed that the Parker bill itself was harmless but opposed it because it would establish a precedent for more drastic legislation in the future.

How Regulation Grows

The development of the present railroad regulation from a seemingly innocuous beginning and the manner in which supervision of the packing house industry had been extended, said Mr. Cochran, showed that the fears of the third group were not wholly groundless. Other amplifications of government power also made clear the danger of making a start. At the same time the speaker placed little confidence in constitutional objections pointing out that regulation had been enforced in many other cases where there was no apparent specific grant of authority to Congress.

The commissioner devoted some time to discussing the position of the Department of Commerce on the legislation now pending. He read a number of extracts from the testimony of Secretary Hoover before the House Committee, in which Mr. Hoover had favored a suspension of Congressional activity in order to give the coal industry a chance to work out its own salvation. The so-called Hoover amendments to the Parker bill made, he said, at the request of the committee, were improvements upon the original draft.

Dr. Allan H. Willetts, National Coal Association, expressed the hope that the statistical work undertaken in a modest way by the bituminous operators would make legislation unnecessary. The National Coal Association, he stated, was unalterably opposed to any Congressional action at this time.

In the general discussion that followed, many members wanted to know what appeals could be made to Congress to forestall legislation. Some of those objecting to regulation, nevertheless, held it would be improper to ask senators to vote against bringing up the Copeland bill for discussion. Mr. Cochran pointed out that a constructive attitude was needed, that the industry could not hope to defeat the organized movement in favor of regulation by a consistently negative policy. Formulation of a definite statement of the association's position will be left to the Committee on Resolutions which reports tomorrow.

Following the formal opening of the convention with an address of welcome by Fred J. Merry, mayor of the city, and a gracefully worded response by George M. Dexter, of New York, past president of the association, the delegates settled down to a consideration of the reports of the officers and committees. President Harry J. Heywood warned the organization that the coal industry was facing the most dangerous period in its history. There was, he said, a real effort, fostered by a minority of domestic consumers in northern New York and New England, to put the coal business into a governmental strait-jacket.

The coal industry, he continued, wants the right to govern itself. It has no fear of the facts. It does not object to the truth being made public. What coal men do fear, however, is misinterpretation of the facts. Mr. Heywood did not believe that it was wise to leave that interpretation to some government bureau in Washington.

Mergers Hit Wholesalers

The indifference shown by so many wholesalers toward association work was the subject of complaint by Roscoe B. Starek, secretary-treasurer, in his annual report. The middlemen have been hard hit by forced and voluntary liquidations and by mergers. It is important, therefore, that those still actively engaged in the business join with the working members of the organization and carry on the constructive projects initiated by the officers and committees. By carefully adjusting the budget, he said, the financial position of the organization had been kept up to the standard of the preceding year. The cash balance as of May 31 was $10,695.

Ira C. Cochran, commissioner, reviewed briefly the activities of the Washington office in traffic, general legislative and trade extension matters. The wholesalers, he said, were working through the National Industrial Traffic League for a liberalization of reweighing rules and against an increase in tolerance allowances. His office also was doing effective work in cutting down delays in the presentation of undercharge claims by the railroads.

The campaign for the adoption of the metric system in this country must be regarded seriously by industry. If it is not, declared Mr. Cochran, there is a real danger that Congress may be persuaded to enact legislation which would entail tremendous loss and confusion to American business. The association was now considering whether it would join in the general campaign under way for a modification of the Sherman anti-trust law. Among the trade extension activities, Mr. Cochran mentioned the work of the organization in registering trademarks and promoting high standards of ethics. Contact had been maintained with the other national associations in the industry. Mr. Cochran urged the use of the radio by local groups to counter-

Senate Refuses To Consider Copeland Bill

Senator Copeland of New York made an ineffectual effort June 7 to get his coal bill before the Senate on a motion to allow consideration of his bill for a period not to exceed two hours. The vote was 43 to 25. Thus the motion failed by the narrowest of margins to receive the two-thirds vote required for a special order of business. As this is written, June 8, the New York Senator is trying to bring his bill before the Senate in a way which will require only a majority vote for its consideration.

The Copeland bill provides for compulsory fact finding, authorizes the President to set up an emergency coal board and to declare operative the fuel distribution act of 1922, with an amendment providing that the Interstate Commerce Commission must comply with recommendations of the fuel distributor.

act fuel-oil propaganda. The association, he said, was now studying proposals of finance corporations to finance deferred payments on domestic coal and would report to the Association thereon at a later date.

E. M. Platt, of Chicago, discussed the efforts of the Western members of the organization to induce the railroads to grant more liberal reconsignment and diversion rules. He cited the practices of the anthracite carriers at Chicago. These rules had been extended to Detroit. Tariffs which would again curtail the Detroit privileges, he announced, had recently been disallowed by the Interstate Commerce Commission.

The Chair appointed Leonard F. Leighton, Carbon Coal and Coke Co., Boston, Mass.; E. M. Platt, Platt & Brahm, Chicago, and George M. Kearns, Kearns Coal Co., Cincinnati, Ohio, as a committee on resolutions. Seth Morton, W. G. Morton Coal Co., Albany, New York; George M. Dexter, Dexter-Carpenter Coal Co., New York; Ira Bixler, Bixler Coal & Coke Co., Pittsburgh, Pa., and Fred Legg, Logan & Kanawha Coal Co., Cincinnati, were named as the committee on nominations.

Pulverized Coal

Joseph Harrington, consulting engineer, Grindle Fuel Equipment Co., addressed the convention this morning on "The Use of Pulverized Fuel." While all the technical problems have not been solved powdered coal is gaining ground in steam-generation. In 1920 the boiler capacity using pulverized coal was 40,000 hp. In 1924 the horsepower had increased to 210,000. Actual consumption now approximates 5,000,000 tons annually as compared with 8,000,000 in cement plants where powdered coal has been used in cement burning for many years. Before long he predicted consumption for steam generation would exceed that for cement burning.

Mr. Harrington's paper provoked lively discussion by coal men interested in selling to plants using powdered coal. The ash content, he said, was more important in running up the cost of pulverization than in affecting combustion. The highest type of underfeed stoker installation with clinker grinders but eliminating economizers and preheaters would give an overall efficiency of 82 per cent as compared with 87 per cent in a pulverized fuel installation. Control of the fine ash blown out of the stack still baffled the engineers.

Owen Meredith Fox, executive vice-president, Chicago Coal Merchants Association, was the last formal speaker of the session. His subject was retail and wholesale co-operation in the establishment of a fuel research institute.

This evening the annual banquet will be held at the Chamber of Commerce. Noah H. Swayne II, of Philadelphia, past president, will be the toastmaster. Edwin Morrow, ex-governor of Kentucky and member of the defunct railway labor board, will be the principal speaker, substituting for Senator Watson of Indiana.

Tomorrow morning the Association will consider the report of the Resolutions Committee and elect officers. G. H. Merryweather, vice-president, is talked of for president.

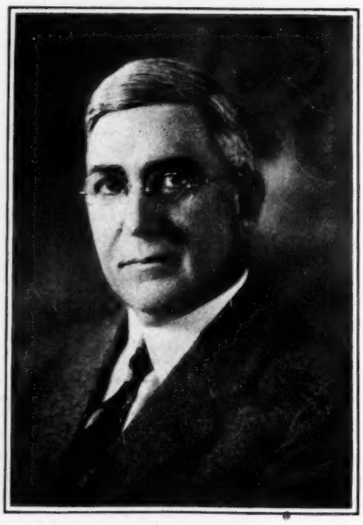
Move to End British Strike

Another move to end the British coal strike, now in its sixth week, was made a few days ago when Evan Williams, representing the mine owners, invited Herbert Smith, president of the Miners' Federation, to meet him informally at an early date. At the time the invitation was extended, Mr. Smith was in Brussels, attending a meeting of the Miners' International. Announcement was made on Saturday that the executives of the Miners' Federation would consider the invitation at a meeting on June 8.

No official announcement of the terms of discussion proposed by the mine owners has been made. Unofficial reports indicate that the operators are ready to abandon their demand for an immediate reduction in wages, but will insist on a longer working day. It is also understood that they may propose a small joint committee, with an independent chairman, to reconsider the entire mining question.

The Cannock Chase operators have offered to pay 1924 wages if the men will work eight hours.

Comment in advance of the meeting of the miners was pessimistic. On June 7, A. J. Cook, secretary of the Miners' Federation, stated that the miners' executive committee would probably agree on the day following to accept the invitation of the coal operators to a preliminary conference regarding the strike.



F. C. Hohn

Who addressed the Coal Mine Officials' Convention at Cincinnati on "Trackwork, Details and Maintenance." Mr. Hohn graduated from Purdue University in the School of Engineering and entered the service of the Baltimore & Ohio R.R. shortly afterwards. He continued in railroad maintenance and construction work until he entered railroad valuation work as chief of field parties with the Kansas City Southern Ry. Later he was with the Delaware & Hudson R.R. Co. in a similar capacity, becoming in 1917 division engineer of that company. In 1919 he had charge of mine and railroad track maintenance and construction for the Hudson Coal Co. He is now engaged in appraisal and consulting work.

Miners Overpowered in Mine of Alpha Cement Company

Within four hours after they had entered the mine of the Alpha Portland Cement Co. at Ironton, Ohio, the last of the eighty miners who had been overcome by a mysterious gas were rescued alive. The miners entered the mine at 7 a.m. and, on reaching the workings off the main shaft, 576 ft. underground, began to lose consciousness. Those nearest the shaft dragged themselves to the cage and were hoisted to safety, where they spread the alarm. Workers with rescue equipment worked continuously until everyone in the crew had been brought to the surface. From all that can be ascertained coal was not being mined at this shaft. According to reports, officials of the company denied that the strange gas which caused the miners to collapse on their way to their work was either blackdamp or methane.

Pennsylvania Coal & Coke Deficit Drops

A deficit of $56,963 for April is reported by the Pennsylvania Coal & Coke Co. and its subsidiaries. This is after charges, ordinary taxes, depreciation and depletion, but before federal taxes, and compared with a deficit for the same month last year of $62,648. For the first four months of this year the company reports a deficit of $77,170, against a deficit of $221,333 in the same period of 1925.

The final report on earnings for 1925 showed a deficit of $467,532, as against a deficit of $425,324 in the preceding year. In its preliminary report, published Jan. 27, the deficit was fixed at $461,294, as against $428,376. Net sales were $5,652,013, as compared with $5,959,582 in 1924. Other income reached $250,824, against $180,279 in 1924. Expenses, depreciation and depletion totaled $6,370,369, as against $6,565,095 in the preceding year. No provision is shown for federal taxes in either year.

Total assets for 1925 were $13,079,923 and total liabilities $12,271,296. Cash was $267,180; accounts and notes receivable, $761,068; United States Government securities, $120,950; inventories, $79,868; and coal on hand, $89,445. Of the current liabilities accounts payable were $457,800, while accrued interest and taxes reached $57,200.

Authorized to Continue Rates

The Interstate Commerce Commission on June 4 authorized nine railroads in the East to continue to charge rates on anthracite transportation from Pennsylvania to certain New England points without observing the long and short haul provisions of the Transportation Act.

The applications were not concerned with petitions for continuance of the emergency rates effective during the anthracite suspension.

Feared That Stiff Stand of Operators May Speed Unfavorable Legislation

By Paul Wooton
Washington Correspondent of *Coal Age*

Opposition from coal operators to legislation providing for even an emergency mediation board has occasioned surprise among members of the House Committee on Interstate and Foreign Commerce. The committee is engaged in an effort to frame a bill that is satisfactory to a majority of its members. It is recognized that there is legitimate objection to arbitration, but some of the members fail to see how, in the event of a deadlock, there can be legitimate objection to mediation. The attitude of the operators has given rise to the thought that they may be planning a finish fight with the union and that they recognize a mediation board would interfere with such a program.

Some members of the committee have gained the impression that a part of the operators, at least, are much opposed to investing the President with any emergency powers for fear that it might spoil an opportunity to break the union—a purpose with which the committee is not in sympathy. As such an effort doubtless would mean a six months' suspension, at least, the nonunion operators are viewing the alleged plan with satisfaction, it is suspected.

Some coal men have declared that the Department of Commerce proposed several changes in the original Parker bill, and that these changes have been embodied in the revised bill; that Secretary Hoover, though he said he was agreeable to a postponement of the consideration of legislative action until the next session of Congress so as to give the unionized section of the bituminous industry a chance to set up its machinery of mediation, nevertheless failed to make a request to the committee to let the matter rest until the next session.

What Some Have Alleged

They allege that a list of witnesses to be heard by the committee was given to the committee by the Department of Commerce and that an employee of the Department, the former secretary of the U. S. Coal Commission conferred with Representative Hamilton Fish of New York before the latter, one of the leading proponents of legislation, testified before the committee.

These reflections on Secretary Hoover are not clearly understood in view of his efforts against regulation of the industry. At the Department it is denied that anyone there advised on the drafting of the original Parker bill, which is a softening of the measure prepared by Senator Copeland. It is admitted that the bill as originally introduced was referred to the Department where alterations and additions were made to the bill to comply with the request, made while Mr. Hoover was testifying before the committee, that he put his suggestions in legislative language. Suggestions which had the effect of making the bill much less stringent were accepted by Chairman Parker and incorporated in his revised bill.

After Mr. Hoover had urged that consideration of legislation be suspended, to see if the industry itself could not set up mediation machinery and provide fundamental facts, the Association's unfriendly statement is expected to increase the determination in the committee to bring out legislation. In addition it has created the impression that the operators are bending their efforts to prevent legislation at any cost and that many of the producers are hoping for a strike. The fact that the Association does not hasten to attempt the development of a mediation plan and a system of fact-finding to cover all the production instead of the thirty per cent in the Association, also is expected to stimulate those who are demanding legislation.

What Congress Might Do

The thought also is expressed that, should there be a suspension next April of sufficient duration to demoralize business and to cause serious public inconvenience, Congress then would not be satisfied with "an emergency mediation board, an emergency authority to the Interstate Commerce Commission in coal distribution and, in failure of provision by the industry, a more effective service as to primary facts."

The least that might be expected under such circumstances would be the early enactment of the recommendations of the Harding Coal Commission, which constitute regulation with a vengence as compared with the regulation-free suggestions to be enacted only after failure of the industry to provide the safeguards for itself.

Eight Research Fellowships At Carnegie Tech

Eight research fellowships will be available in connection with the program of mining and metallurgical research at the Carnegie Institute of Technology for next year. According to the announcement, the fellowships are open to graduates of colleges, universities and technical schools who are properly qualified to undertake research investigations, and will be awarded for a ten months' period beginning Aug. 16, 1926.

Most of the research work will be conducted in the laboratories of the Pittsburgh station of the U. S. Bureau of Mines, adjacent to the campus. The subjects for investigation, as in the past, will be selected by two advisory boards composed of metallurgists, mining engineers, chemists and coal operators. At the end of the period of study, the results of the investigations, it is announced, will be published jointly by the Carnegie Institute of Technology, the Bureau of Mines, and the Advisory Boards.

Predicts "Cultural Wage" Instead of Living Pay

"Industry is approaching rapidly toward a new objective in this country," said Owen D. Young, chairman of the General Electric Co., speaking at the tenth annual meeting of the National Industrial Conference in the Hotel Astor, New York City, last week. "The 'cultural wage,' as compared to the old ideal of a 'living wage,' is what I refer to.

"By cultural wage I mean that which will enable a workman to develop his intellect, so that he will be in a position to take advantage of all opportunities offered by this country. When the time comes there will be equal opportunity for all men in the United States."

Mr. Young does not feel that industry will be less profitable because of the cultural wage. "Industry may become even more profitable, and industry should be profitable," he said.

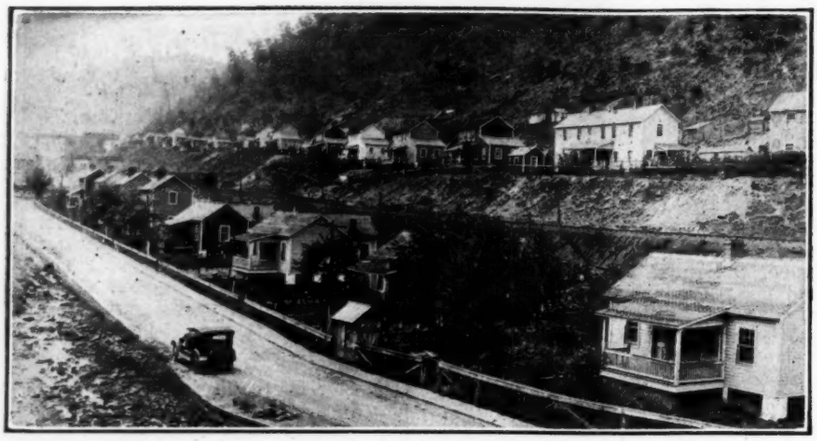
"I have no sympathy for indictment of profits. They are the motive power of industry, and why deny it or apologize for it? I notice that when a governmental investigation of industry is being made the investigators always pick on the ones who are making profits. I think it ought to be the other way around, for when industries are making money it follows that they are also delivering a service people are willing to pay for."

Bittner Wins Rehearing of Charge of Contempt

The West Virginia Supreme Court of Appeals on June 3 granted Van A. Bittner, chief international representative of the United Mine Workers in northern West Virginia a rehearing on the charge of contempt of court. The rehearing will come up at the September term of the Supreme Court. The case was first heard in that court on a writ of error on March 9, and was dismissed on the ground that the court had no jurisdiction.

Bittner was sentenced to serve six months in jail on a charge of contempt toward an injunction granted by Judge I. Grant Lazelle of Morgantown, in the Monongalia Circuit Court. In an address in Farmington and later at a mass meeting in Fairmont, Bittner is charged with having flaunted the court's order in an attack on injunctions.

Points made by Attorney Thomas C. Townsend, attorney for Bittner were as follows: That the evidence did not show that Bittner had notice of the injunction and did not prove any contempt; that the Supreme Court in its former opinions did not recognize the distinctions between civil and criminal contempts and that "the defense, if any, was a constructive criminal contempt and under the statute entitled to have the charge reviewed."



County Road in a Mountainous Mining Town of Pocahontas Region

Good roads, prosperity and the automobile go together. This shows the concrete road and sidewalk along the headwaters of Sand Lick leading into the town of Filbert in McDowell County, W. Va.

Seek Modified Metric System, Failing Real Thing

Other legislative proposals intended to bring about increased use of the metric system of weights and measures having failed, bills now have been introduced in the Senate and in the House proposing that the Department of Commerce be authorized "to establish commodity quantity units for general use in merchandising after 1935, standardizing the yard to the meter, the quart to the liter, and the pound to 500 grams, decimally divided."

The legislation, which was introduced in the Senate by Mr. Gillett, of Massachusetts, and in the House by Mr. Britten, of Illinois, carries a preamble pointing out that "the Constitution of the United States of America provides in Sec. 8, Par. 5, that Congress has the power to fix the standards of weights and measures"; that there now exists a lack of uniformity in the weights and measures of the United States," and, that "these are not standardized with the weights and measures used by the vast majority of nations of the world."

It was stated at the committee on coinage, weights and measures of the House that the committee would give no consideration to the measure at this session. In the Senate the bill was referred to the commerce committee, instead of the manufactures committee, to which such legislation has been referred before. As the commerce committee is one of the busiest of the Senate it is believed that no time could be found thus late in the session to consider the metric bill.

Development of Explosives Outlined in Lecture

Sir Frederick Nathan, K.B.E., chairman of the Explosives in Mines Research Committee of the Safety in Mines Research Board of England, spoke on "Mining Explosives" recently in the third of a series of six lectures on "Some Problems in the Mining Industry" given at the University of Sheffield, England, under the auspices of the Department of Mining.

Reviewing the history of explosives in general, the history of their adoption in mining, and finally the history of permissible explosives, Sir Frederick said the present methods of testing explosives for permissibility were only empirical and did not always reproduce the conditions met with in a mine. One of the difficulties encountered was the production of atmospheres of constant explosibility and ease of ignition. The greatest difficulty, that of obtaining an adequate supply of pure methane, was now being overcome at the Rotherham testing station by producing it from wood pulp by fermentation.

The fact that an explosive was on the permissible list, said Sir Frederick, was not a guarantee that it would not cause ignition of an inflammable atmosphere. It merely certified that the explosive was safe in comparison with other explosives. No explosive is safe. The objects of present research are to produce explosives which are less liable to produce ignitions of explosive atmospheres than existing explosives and which would bring the coal down in a manner similar to or better than blasting powder. With that object in view, fundamental research is being carried out on both the inflammable mixtures and the explosives.

Number and Annual Output of Soft-Coal Mines in the United States in 1924, by Classes[a]

Exclusive of Wagon Mines

	Class 1, Producing Over 200,000 Net Tons			Class 2, Producing 100,000-200,000 Net Tons			Class 3, Producing 50,000-100,000 Net Tons			Class 4, Producing 10,000-50,000 Net Tons			Class 5, Producing Less Than 10,000 Net Tons				
State	No.	Per Cent of Total Mines	Per Cent of State Output	No.	Per Cent of Total Mines	Per Cent of State Output	No.	Per Cent of Total Mines	Per Cent of State Output	No.	Per Cent of Total Mines	Per Cent of State Output	No.	Per Cent of Total Mines	Per Cent of State Output	No. of Mines	State Output (Net Tons)
Alabama	21	8.9	42.9	27	11.3	20.2	49	20.6	20.3	90	37.8	15.4	51	21.4	1.2	238	19,130,000
Alaska	...	....	....	...	....	....	1	12.5	51.6	1	12.5	35.3	6	75.0	13.1	8	100,000
Arkansas	...	....	....	1	1.2	8.4	7	8.1	31.2	28	32.6	48.2	50	58.1	12.2	86	1,452,000
Calif., Idaho, Nebr. and Oregon	...	....	....	...	....	....	...	....	....	...	....	....	9	100.0	100.0	9	17,000
Colorado	15	6.5	37.0	21	9.1	29.1	27	11.7	18.3	47	20.3	12.8	121	52.4	2.8	231	10,444,000
Georgia	...	....	....	...	....	....	1	50.0	97.3	...	....	....	1	50.0	2.7	2	75,000
Illinois	106	21.7	77.7	59	12.1	12.1	58	11.9	6.4	88	18.0	3.0	177	36.3	0.8	488	68,323,000
Indiana	37	14.9	55.8	33	13.3	22.8	39	15.7	13.1	57	23.0	6.9	82	33.1	1.4	248	21,480,000
Iowa	4	1.6	22.4	11	4.3	27.9	14	5.5	17.8	49	19.1	23.4	178	69.5	8.5	256	5,468,000
Kansas	2	0.9	10.8	7	3.1	21.2	18	7.9	29.9	48	21.0	25.4	153	67.1	12.7	228	4,248,000
Kentucky: Eastern	46	9.3	38.1	84	17.0	31.7	92	18.5	18.7	142	28.6	10.2	132	26.6	1.3	496	36,127,000
Western	8	4.9	22.8	25	15.2	37.4	23	14.0	18.4	62	37.8	19.7	46	28.1	1.7	164	9,020,000
Maryland	...	....	....	4	4.3	23.5	7	7.5	21.4	37	39.8	47.8	45	48.4	7.3	93	2,134,000
Michigan	2	22.2	57.6	1	11.1	17.5	2	22.2	17.4	3	33.3	7.1	1	11.2	0.4	9	831,000
Missouri	...	....	....	...	....	....	17	13.4	48.9	40	31.5	39.9	70	55.1	11.2	127	2,481,000
Montana	3	4.4	50.2	5	7.3	28.9	4	5.9	9.0	8	11.8	6.7	48	70.6	5.2	68	2,905,000
New Mexico	2	4.8	26.6	11	26.2	51.6	6	14.3	14.4	7	16.7	6.0	16	38.0	1.4	42	2,786,000
North Carolina	...	....	....	...	....	....	...	....	....	2	100.0	100.0	...	....	....	2	57,000
North Dakota	...	....	....	3	2.3	34.2	3	2.3	16.7	17	12.9	29.6	109	82.5	19.5	132	1,201,000
Ohio	43	5.7	43.2	56	7.5	25.6	59	7.9	13.7	172	22.9	13.2	420	56.0	4.3	750	30,473,000
Oklahoma	...	....	....	3	3.2	15.7	8	8.5	23.1	45	47.9	53.1	38	40.4	8.1	94	2,330,000
Pennsylvania	181	8.5	54.1	196	9.2	20.9	210	9.9	11.6	591	27.9	10.8	944	44.5	2.6	2,122	130,634,000
South Dakota	...	....	....	...	....	....	...	....	....	...	....	....	16	100.0	100.0	16	12,000
Tennessee	...	....	....	13	9.4	39.4	15	10.8	25.5	56	40.2	30.8	55	39.6	4.3	139	4,557,000
Texas	...	....	....	1	2.3	9.7	5	11.4	24.8	31	70.4	61.5	7	15.9	4.0	44	1,147,000
Utah	8	20.5	53.1	9	23.1	32.4	7	17.9	11.3	4	10.3	2.8	11	28.2	0.4	39	4,488,000
Virginia	22	19.2	69.3	6	5.2	8.1	20	17.4	13.6	34	29.5	7.9	33	28.7	1.1	115	10,693,000
Washington	5	8.6	48.0	5	8.7	24.5	6	10.3	15.6	12	20.7	9.5	30	51.7	2.4	58	2,654,000
West Virginia	132	10.8	41.8	216	17.7	30.5	236	19.3	16.4	369	30.3	10.3	267	21.9	1.0	1,220	101,663,000
Wyoming	9	14.5	38.5	22	35.5	47.7	9	14.5	10.5	7	11.3	2.9	15	24.2	0.4	62	6,757,000
Total	646	8.5	49.0	819	10.8	23.8	943	12.4	14.1	2,047	27.0	10.9	3,131	41.3	2.2	7,586	483,687,000

(a) Note that this table represents mines, not companies, for which the showing would be very different. Statistics compiled by U. S. Bureau of Mines.

Lignite Produced in North Dakota in 1924[a]

(Exclusive of product of wagon mines)

County	Net Tons: Loaded at Mines for Shipment	Net Tons: Sold to Local Trade and Used By Employees	Net Tons: Used at Mines for Steam and Heat	Net Tons: Total Quantity	Value: Total	Value: Average per Ton	Number of Employees: Underground: Miners b	Number of Employees: Underground: All Others	Number of Employees: Surface	Number of Employees: Total	Average Number of Days Worked	Average Tons per Man per Day
Adams	36,975	6,856	1,084	44,915	$102,000	$2.27	33	13	10	56	163	4.93
Bowman	20,679	6,207	3,600	30,486	53,000	1.74	24	6	8	38	197	4.07
Burke	299,779	5,476	5,426	310,679	684,000	2.20	.....	.....	156	156	149	13.38
Burleigh	115,592	13,204	6,134	134,930	283,000	2.10	124	38	43	205	117	5.64
Divide	29,053	7,960	.....	37,013	80,000	2.16	31	7	9	47	149	5.30
Grant	40	5,995	.....	6,035	13,000	2.15	4	4	2	10	186	3.25
Hettinger	18,404	7,212	435	26,051	56,000	2.15	38	9	13	60	166	2.62
McLean	65,486	24,532	1,351	91,369	205,000	2.24	59	13	41	113	156	5.20
Mercer	255,532	3,599	6,787	265,918	517,000	1.94	110	35	96	241	198	5.56
Morton	21,216	24,702	2,147	48,065	87,000	1.81	29	6	13	48	237	4.23
Montrail	.....	3,286	.....	3,286	9,400	2.86	7	.....	.....	7	141	3.32
Stark	30,202	21,358	1,940	53,500	84,000	1.57	46	20	18	84	143	4.46
Ward	24,385	35,793	.....	60,178	131,000	2.18	72	14	15	101	205	2.91
Williams	21,816	41,244	492	63,552	121,000	1.90	66	16	9	91	162	4.30
Other countries c	18,828	5,622	100	24,550	47,600	1.94	28	5	8	41	147	4.09
Total	957,987	212,994	29,546	1,200,527	2,473,000	2.06	671	186	441	1,298	165	5.62

a Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. Many mines that operated in 1923 produced no coal in 1924; moreover, many of the mines that did produce in 1924 worked for a short time only. The number of active mines of commercial size in North Dakota was 144 in 1923 and 132 in 1924.

b Includes also loaders and shotfirers.

c Billings, Dunn, Golden Valley and Oliver.

Statistics issued by U. S. Bureau of Mines.

130 Mine Workers Die From Accidents in April; Month's Death Rate Low

Accidents at coal mines in the United States during April, 1926, according to reports received by the U. S. Bureau of Mines from state mine inspectors, caused the death of 130 men; 101 occurring in bituminous mines and 29 in anthracite mines. The death rate per million tons of coal mined during the month was 2.69, based on a production of 48,296,000 tons, as compared with 3.90 for April, 1925, based on an output of 40,994,000 tons. The rate for bituminous coal alone was 2.52, with a production of 40,079,000 tons, and that for anthracite was 3.53 and a tonnage of 8,127,000, as compared with 3.53 and 5.62, respectively, for April of last year, with a production of 33,702,000 and 7,292,000 tons.

During the first four months of 1926, 814 men lost their lives from accidents in the coal-mining industry. The production of coal in this period was 205,718,000 tons, showing a death rate of 3.96 as against 4.14 for the same four months in 1925.

Accident Rates, United States, with Causes

	Year 1925	Jan.-Apr. 1925	Jan.-Apr. 1926
All causes	3.811	4.144	3.957
Falls of roof and coal	1.842	1.946	1.774
Haulage	.615	.603	.631
Gas or dust explosions	.590	.666	1.001
Explosives	.174	.226	.127
Electricity	.144	.142	.112

No major disasters occurred in April but there were seven in the preceding months of 1926, which caused the loss of 190 lives. There were 4 major disasters causing the death of 96 men during January to April in 1925. The fatality rates based exclusively on these figures were 0.924 and 0.504 for the four-month period in 1926 and 1925.

Considering accidents by principal causes for the period January to April, a reduction is noted in the per-million-ton fatality rates in all of the principal classes of accidents except those caused by gas or dust explosions, which showed a marked increase. All of the major disasters thus far in 1926 have been caused by explosions. The comparative rates for the principal causes of accidents were as set forth in the accompanying table.

Brotherhood Mining Company Elects Officers

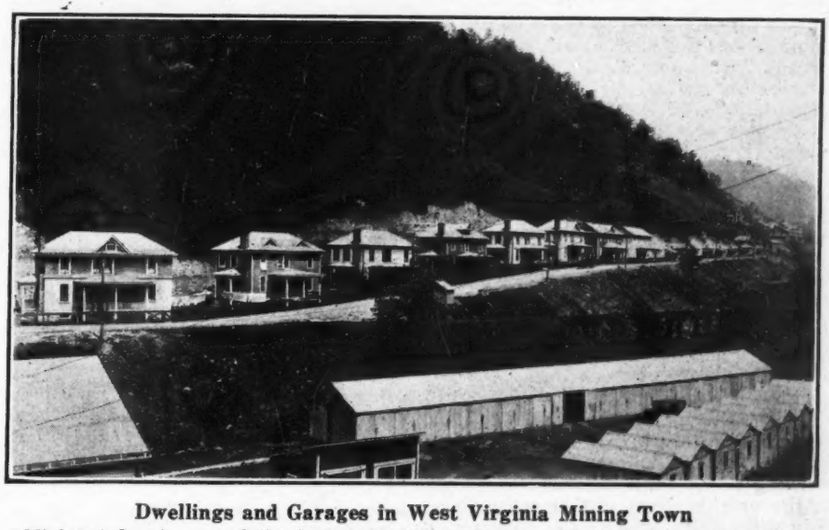
At the board of directors' meeting of the Coal River Collieries Co., owned and controlled by the Brotherhood of Locomotive Engineers, held in Huntington, W. Va., on June 1, J. T. Dunigan was re-elected president. Other officers elected were: First vice-president, T. C. Songer, Ashland, Ky.; second vice-president, N. J. Burns, Wilkes-Barre, Pa.; secretary-treasurer, G. G. Huffman, Cleveland, Ohio; and assistant secretary-treasurer, J. Rex Cooper. E. C. Glass of Huntington, W. Va., was named as chairman of the board of directors and the executive committeemen chosen included Messrs. Dunigan, Glass and Huffman. E. C. Sandberg of Charleston, W. Va., was chosen superintendent of the company's Boone County holdings.

World Conference at Pittsburgh to Study Better Uses for Coal

An international conference on coal will be held at the Carnegie Institute of Technology in Pittsburgh the end of November, 1926, according to an announcement of plans now being devised by Dr. Thomas S. Baker, president of the Institution.

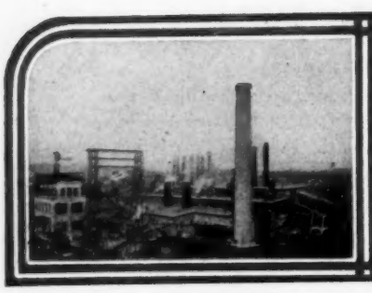
Several prominent scientists of Germany, France and England have been, or will be invited to participate in the discussions, according to President Baker's plans, and in addition, papers will be presented by a number of leading American engineers and scientists representing the latest discoveries in connection with the distillation of coal, its byproducts, new methods of producing energy from coal, etc.

Some of the topics that are now receiving the consideration of President Baker and his associates for discussion during the conference are the low temperature carbonization of coal, generation of power at the mines, domestic use of coke, and water power vs. coal energy.



Dwellings and Garages in West Virginia Mining Town

Mining today is one of the best paid callings known and the miner demands and receives better housing than most other people. Note the dwellings in the background and the garages—row on row—in the foreground. This is part of the village of Thorpe, McDowell County, West Virginia, the No. 4 property of the United States Coal & Coke Co.



News Items From Field and Trade

ALABAMA

Install Big Conveyor Belt.—The Brookside-Pratt Mining Co. is installing a conveyor belt at its new Warrior River opening for conveying the coal from inside the mine to the tipple. Deister concentrating tables are also being installed. Other improvements are being made with a view to largely increasing production and improvement in the quality of the product.

COLORADO

Frank L. Bishop has resigned as receiver for the Routt-Pinnacle Coal Co. and L. B. Bromfield has been appointed by Judge Dunklee of the District Court to succeed him.

ILLINOIS

Groveland Takes New Quarters.—The Groveland Coal Mining Co. has removed its office from the Straus Building in Chicago to Suite 708 Bell Building. The company also has opened an office in the new Stark Building, Louisville, Ky., in charge of R. W. Hunter, vice-president, directing Kentucky operations.

The Bush Mining Co., a subsidiary of the Missouri Pacific R.R., is about to start sinking a new mine between Bush and Elkville. The mine, it is said, will be of large capacity and will be located almost exactly on the Jackson-Williamson county line.

Extensive Stripping Planned.—Representatives of the Union Electrical Coal Co., of Danville, have been exercising options on coal lands in the vicinity of Duquoin for the past month and have already paid out about $100,000 to farmers in the vicinity on what will ultimately be a million-dollar deal if all options are exercised, as it is presumed they will be. The options and plans which have been completed foreshadow the opening of one of the largest strip mines in the world within the next 18 months. The company will remove approximately 40,000,000 tons from the acreage now under lease and employ from 275 to 300 men.

Dullness Shrouds Herrin.—After operating almost steadily for fifteen years, Mine A, of the Chicago, Wilmington & Franklin Coal Co., at Herrin, closed down indefinitely on May 29. One mine in the Herrin district, owned by the Jeffrey Coal & Mining Co., is working now. Mine A, which employs in the neighborhood of 740 men, probably will reopen later in the summer.

Examiners' Itinerary.—A. D. Lewis, of Springfield, Director of the Department of Mines and Minerals of Illinois, announces the following June itinerary of the Illinois Miners' Examining Board: West Frankfort, 10th; Duquoin, 11th; Centralia, 12th; Litchfield, 14th; Springfield, 15th; Taylorville, 16th; Danville, 17th; La Salle, 18th, and Peoria, 19th.

Coal Roads Merge.—The Illinois Commerce Commission on June 2 authorized the Missouri Pacific RR. to purchase all of the outstanding capital stock of the Marion & Eastern RR. Co. for $190,000. It is believed that the taking over by the Missouri Pacific of this coal road will result in the re-opening of several coal mines along the Marion & Eastern. The direct connection through the Missouri Pacific System to the markets of the Central West should prove beneficial to the mines.

The New National mine at Belleville, Ill., reopened on June 3. It employs 150 workers. The reopening is in anticipation of a late Summer demand for coal.

More Stripping Forecast.—Approximately 10,000 acres of farm land west and southwest of Duquoin, Ill., have been purchased by the United Electric Company of Danville, Ill. and New York. The company is said to have paid more than $150,000 for 1,400 acres of the land and it is expected that the entire acreage will cost $1,000,000 or more. The company will strip the coal. The acreage embraces 40,000,000 tons.

The Binzel mine at Farmington, was sold May 20 at bankrupt sale and brought only $12,922. It is said to be questionable whether the United States court would approve the sale.

The closing down of Wasson coal mine No. 1 east of Harrisburg, Ill., has been followed by the opening of Wasson mine No. 2 just west of Carrier Mills. This mine has been closed for about two years.

The main offices of the Brewerton Coal Company was removed June 1 from Lincoln, Ill., to Chicago. This company operates mines at Lincoln, Springfield and in southern Illinois, with branch offices at Kansas City and Chicago. The Central Illinois mines have become the smallest part of the Brewerton enterprises and the main offices will in the future be maintained in Chicago. Most of the staff in the Lincoln office is removing to Chicago, as is also W. A. Brewerton.

The Peabody No. 6 mine, at Springfield, hoisted 4,727 tons of coal, May 26, breaking the record in the Springfield sub-district.

IOWA

The Rock Island Railroad is erecting a new coaling station at Washington, at a cost of $50,000.

KANSAS

Blame Blast on Sparks from Pump.—Inspectors attribute the explosion which killed four men in the Cigaret mine near Cherokee, on May 14, to the ignition of gas by sparks from the brushes of an electric pump in operation at the bottom of the pit. The mine was partly wrecked March 13 by a gas explosion. The four men killed May 14 were pumping out the mine preparatory to making repairs to permit the resumption of digging. The mine was being opened by D. W. Bash, of Joplin, Mo., operatting as the Lightning Creek Coal Co.

Shovel Mine to Open Soon.—Operation of the new steam-shovel mine of the Kelly-Carter Coal Co. on what is known as the No. 9 lease of the Sheridan Coal Co., a mile north of Mulberry, is scheduled to begin July 15. The company has bought a large shovel, which was installed a year ago at the mine of the Superior Coal Co., a mile east of Weir. The 35-B type loader is on the ground and a loading tipple is being erected. The tipple will be electrically operated. The plant is near the Kansas City Southern R.R. and has a tract of 135 acres of 3-ft. coal with a 20 to 25-ft. overburden. When in full operation it will have a daily production of 600 tons.

The Kansas state Commission of Forestry, Fish and Game has given approval for a 400-acre fish and game preserve five miles north of Pittsburg on land cut up by coal stripping operations. This is part of the state program for reforestation and fish and game protection adopted by the last legislature at the instance of the Izaak Walton League. Pittsburg business men and other citizens are buying the land from the Pittsburg & Cherokee Coal & Mining Co. to present it to the state. It is thought this may be the beginning of a system of preserves in which the ponds formed in old strip pits can be linked together and stocked with fish, while the land can be beautified with trees and shrubbery.

KENTUCKY

The Beaver Coal Mining Co. has been organized to take over the operation of the Blackburn Coal Co., Alphoretta. The company has 200 acres under development at present, and more available land. The daily output of the company is 250 tons.

The Asher Coal Mining Co. will issue $850,000 bonds to retire $285,500 of

5 per cent first mortgage bonds of the company and approximately $800,000 floating debt and to complete the purchase of 16,000 acres of land located in Clay and Leslie counties.

Incendiary fire is believed to have been responsible for the loss of stables, mules, powder house and about fifty kegs of powder at the Rhea Coal Co. plant, seven miles from Madisonville, on May 24, at an early hour in the morning.

Begin Work on River Control.—Work is well under way on a new combination power dam and river-stage control at Louisville, which it is said will insure boating stages between Louisville and Cincinnati, to bring coal down as far as Louisville. The dam is being built jointly by the government and the Louisville Hydro Electric Co.

Twenty-eight cases in equity involving titles to coal, oil and timber lands in eastern Kentucky are before the session of the Federal District Court at Catlettsburg, which started work on May 24, under Federal Judge Cochran.

Long Litigation Ended. — Litigation which has been in progress for over a year to determine the control of the Carr's Fork Coal Co., of Perry County, came to an end May 26, when Judge Hurley approved an entry dismissing an injunction suit brought by Harry E. Bullock, of Lexington, and L. H. Stone, of Cincinnati, to prevent B. Kemp Littlepage from selling certain stock of the Wallin's Creek Coal Co., of which Littlepage was the liquidating agent. There is a long story connected with the manner in which this became a balance of power between the opposing factions in the Carr's Fork Coal Co., and while Littlepage was dickering with members of the factions they composed their differences and found means by which the company could proceed. The Carr's Fork company is a $1,000,000 concern.

Two residences belonging to the Lee Land Coal Co., Island, were destroyed in a $50,000 fire about the middle of May.

Takes Over Blackburn Mines.—The Beaver Coal Mining Co., Ashland, of which E. W. Smith is secretary and treasurer, has taken over the operation of the mines of the Blackburn Coal Co., Alphoretta, and has 200 acres under development at present, with daily output of 250 tons.

Plans Big Bond Issue.—The Asher Coal Mining Co., Lexington, of which T. J. Asher is president, is reported to be about to issue bonds for $850,000, with which to retire outstanding bonds, clean up floating debt and purchase 16,500 acres of coal land in Clay and Leslie counties.

Three thousand acres of mineral land in Hopkins County has been leased by the Hopkins County Mineral & Mining Co. and will be developed in the near future, according to announcements from company officials. Mineral specimens are being analyzed and reports on the quantitative values of the mineral deposits are expected in the near future. Lessors of the property are J. D. Mitchell and J. F. Montgomery, both of Providence, Ky.; and Louis Corberger, Colorado mining man.

In the Federal Court at Louisville Judge Charles I. Dawson has taken under submission testimony in the Federal Government tax case against J. W. Lam, Greenville, Ky., last surviving stockholder of the Hillside Coal Co., for $20,017.54 in income taxes alleged to be due for the years 1916, 1917 and 1918. The company was liquidated in 1919, but assets alleged to have been recovered by Lam from the company are the basis of the suit.

Strike Declared.—The first labor trouble in western Kentucky for some time is that of 350 miners and workmen of the Norton Mining Co., Nortonville, Ky., who declared a strike on June 2, because of a controversy regarding working conditions. The company is controlled by the Monroe-Warrior Coal & Coke Co. interests of Alabama.

The Louisville & Nashville R.R. Co., has announced the letting of additional equipment contracts totaling $2,400,784, making $11,100,784 contracted on new equipment since December. Included in the contracts are thirty-two locomotives, of which twenty-four are big Mikado freight types, for heavy hauling.

MARYLAND

Strike Preparations?—The Jones & Laughlin Steel Corporation, it is understood, will establish a large coal reserve on Neville Island. The last time the company established a coal reserve was during the strike of 1922. The move may represent only a desire to have a sufficient supply of coal on hand, especially as the company consumes more coal now in additional ovens at its by-product plants, but in various circles there are references now and then to the possibility of a strike of the union mines next year. According to local coal men, a glimpse of the coal pile of the United States Steel Corporation at Wilson, near Clairton works would almost lend the belief that there is enough coal stored there to supply the country. Incidentally, the steel company mines of the district are all union.

The Chesapeake & Ohio canal, in Maryland, will remain idle for the third year, according to the Canal Towage Co., which operates the canal. There is no coal business—that's the cause.

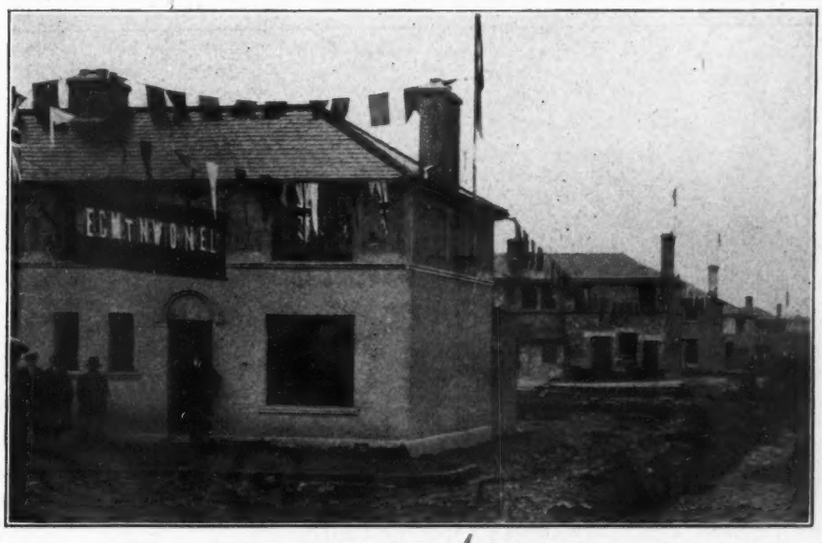
The Board of Awards of Baltimore has announced the placing of contracts for 60,000 tons of semi-bituminous and 4,400 tons of anthracite to take care of municipal department needs for one year. The price of this coal aggregated $347,000. The head of the Bureau of Standards stated that under the new contract anthracite will cost the city 40c. per ton more than was paid under old contracts. There was no advance in the price of the semi-bituminous coal delivered in carload lots from the mines.

MINNESOTA

Exchange Has Tenth Birthday.—The Twin City Coal Exchange, composed of independent dealers, celebrated its tenth anniversary May 25 with a dinner at the St. Paul Athletic Club. The meeting was in the nature of a celebration over the outcome of a lawsuit recently tried before the U. S. Circuit Court of Appeals requiring railroads to pay full price for coal lost in transit. J. R. Hartzell was the principal speaker.

Concrete Replaces Wood Pier.—The Clarkson Coal & Dock Co. has awarded a contract for the building of 800 ft. of concrete piers and sheet piling at its dock at Duluth to replace wooden construction. The work will be completed within a month and is estimated to cost $25,000.

Ford Control Complete.—The Ford interests are now sole owners of the dock property of the bankrupt Superior Coal Dock Co. at Duluth. The Ford Motor Co. acquired the mortgage issue of the defunct company and by paying $80,000 to the receivers to cover in-



A Street Corner in Newtownkelly, Coalisland, Tyrone County

Decorated for a festival. Newtownkelly is a "captive mine" like most of the best in this country, for Sir Samuel Kelly, the owner, is interested in a large coasting fleet serving ports in the British Isles. Each house has a parlor, kitchenette, scullery, three bedrooms, bath and washboiler.

terest, and $130,000 to the Brownhoist Co. of Cleveland who built the bridges at the time the dock was remodelel three years ago, it now has complete control. There was no opposition to the sale. It is understood that the Ford interests plan many improvements in the dock during this season.

Incorporates Dock Company.—The St. Louis Dock Co., a United States Steel Corporation subsidiary, has been incorporated to operate the coal dock of the Duluth, Missabe & Northern R.R. That dock will continue to be used to store and handle bituminous coal for the use of the Minnesota Steel Co. and the Universal Portland Cement Co. at Duluth and the Oliver Iron Mining Co. and the Duluth, Missabe & Northern R.R., Steel Corporation subsidiaries.

Receivers Appointed.—Receivers were named last week in Minneapolis, in the federal court for the Flour City Fuel & Transfer Co., one of the large independent retail concerns of the city. The receivers were P. F. Herrly, of the Pittsburgh & Ashland Coal Co. and J. D. Eckstrum, of the Flour City company. The action was brought by the Pittsburgh & Ashland Co. which declares the property to be worth $1,000,000 and the accounts due to be $750,000. The application was made at the request of a creditors' committee. The action was not contested by the coal company.

MISSOURI

The name of the Midland Coke & Iron Co., of St. Louis, has been changed to the St. Louis Coke & Iron Co. The name was changed in order to avoid conflicting with a company of a similar name.

NEW JERSEY

The Halden-Kelley Coal Co., Inc., of Clearfield, Pa., has moved its Eastern office to the new Military Park Building, Newark, N. J. This office is in charge of Mr. Halden, president of the company, who will supervise the purchasing for the three retail yards of the company and also for wholesale distribution.

NEW YORK

The str. "Harvey J. Kendall," of the George Hall fleet, Ogdensburg, which sank in 20 ft. of water in the St. Lawrence last fall, has just been raised and will be refitted for re-entering the coal and general trade. She has a wood hull of 500 tons capacity and was built in 1892.

OHIO

Will Ask for Coal Bids.—The City Council of Hamilton, Ohio, has authorized Service Director G. C. Mitchell to advertise for bids for 20,000 tons of West Virginia or Kentucky mine-run or screenings for the municipal light plant and the water works departments. The Board of Education of Hamilton will open bids June 17 for 2,000 tons of bituminous lump, egg or mine-run and 2,000 tons of smokeless lump, egg or mine-run for the Hamilton schools, to be delivered at the various buildings. Charles F. Holdefer is clerk of the board.

The Wheeler Coal & Coke Co., Columbus, recently chartered with a capital of $50,000, has been organized by the election of W. E. Wheeler, president and manager; C. E. Wheeler, vice-president, and E. A. Wheeler, secretary and treasurer. The company formerly operated as a partnership and does a general jobbing business. Negotiations are in progress to take over a mine in the Blue Creek district of the Kanawha field in West Virginia. The company has the sale of the output of several other Kanawha district mines.

The annual report of the Cincinnati Operating Committee of the American Railway Association credits this city with being one of the largest soft-coal centers in the United States. Last year the railroads delivered a total of 638,701 car loads of coal at Cincinnati. Of this amount, 104,147 was consigned for further shipment to the Great Lakes. The C. & O. delivered 313,314 loads of coal, the L. & N. 292,519, the Norfolk & Western 27,164 and the Southern 5,704 car loads. Over 900,000 empty freight cars were received in 1925.

The Cincinnati Coal Exchange is negotiating with Station WSAI, operated by the U. S. Playing Card Co. in that city, for the broadcasting of ten weekly messages to householders emphasizing the urgency of stocking coal during the summer. The geological story of coal also will be told. Those on the committee of arrangements for this feature are Calvin Holmes, Armour A. Sizer, W. J. Magee, Burke H. Keeney, Jim Reilley, George Kearns and the president, Nolan L. Mahan.

Included in the last pay of the miners of the Lorain Coal & Dock Co. in eastern Ohio, was a statement from R. L. Wildermuth which contained the following: "Every ton of lake coal sold in 1925 resulted in a loss to this company. We cannot afford to continue this policy and as a result we feel it our duty to notify our employees that our contracts for lake tonnage have been lost and the business has gone to West Virginia." The company has three mines down, and two others that are still working, are expected to go down soon.

Ohio Men Refuse Cut.—It is reported that the West Wheeling Coal Co., of which Henry Johnson is general manage, offered its miners in the Bridgeport district a proposition entailing a 20-per cent cut in wages to reopen the mines, but the proposal was turned down. Many of the men are said to have gone to southern West Virginia, where the wage rate is even lower than the 20-per cent cut would have meant from the Jacksonville scale.

Retailers Plan Open Meeting.—The Columbus Retail Coal Merchants' Credit Association, composed of the leading dealers of the city, has arranged for an open meeting June 7, and operators and jobbers of Columbus have been invited to attend. The association has now established permanent headquarters in the Chamber of Commerce Building with Ernest E. Althoff in charge as secretary and manager of the credit bureau. Steps are being taken to work in co-operation with the credit bureau of the Columbus Retail Merchants' Association.

Columbus Awards School Contracts.—The Columbus Board of Education has awarded contracts for 15,000 tons of Hocking lump, delivered at the various school buildings at $3.94 per ton. At the same time the Colonial Coal Co. was given a contract for 2,000 tons of West Virginia nut, pea and slack at $3.58 per ton. The total amount involved in the two contracts is $66,260.

PENNSYLVANIA

Fined for Mining Law Violation.—Charged with carrying cigarettes into the Edenborn mine, William Jackson, a negro, was arrested and committed to the Fayette County jail on oath of State Mine Inspector Edward E. Good. He was later released under a $200 bail.

Watching a Run for Their Money

Some of the stockholders of the Coal River Collieries Co. watching coal being loaded at the four-track tipple of No. 4 mine near Seth, W. Va. The coal is carried down the mountainside on an apron conveyor. On the annual inspection trip certain of the stockholder saw that "coal" was used to surface the roads. Later they learned that this "coal" was refuse.

Mine Exams in July.—In co-operation with the Carnegie Institute of Technology a special examination for firebosses, assistant mine foremen and mine foremen will be held by the Pennsylvania Department of Mines on July 12, 13 and 14, at the Pittsburgh educational institution. The dates will be of special convenience to the students in the Carnegie Tech summer course in coal mining, which ends on July 10. but any coal miner who feels qualified may take the tests.

Second Terminal Mine Closes.—The Pittsburgh Terminal Coal Corporation has closed down No. 2 mine, near Charleroi, indefinitely, 400 workers having been notified to remove their tools. The company, which received considerable recognition due to its ability to operate seven mines full for nearly two years on the Jacksonville scale while the other mines of the district, including those of the Pittsburgh Coal Co., were being shut down or had already been closed, has felt a slackening in business this spring. The company also has another mine down at Avella. The shutdown of No. 2 mine will enable the other five mines of the company to operate at a better rate.

Harris Retires Quietly. — Harry K. Harris, associate engineer in the Scranton bureau of mine caves and surface support, is reported to have resigned May 1 to manage a coal company in Tamaqua. Mr. Harris' retirement came to light about a week ago. William H. Rolles, of North Scranton, has been named successor to Mr. Harris. Mr. Harris was for many years a colliery superintendent for the Glen Alden Coal Co.

WEST VIRGINIA

New coal companies organized in West Virginia in April, including one non-resident coal corporation, had an aggregate capital stock of $3,600,000, the non-resident company being the largest of the group. In the list of new concerns were the **Allen Coal Mining Co.**, of Williamson, capitalized at $25,000; **Silver Creek Mining Co.**, of Welch, $300,000; **Kanawha Block Coal Co.**, 200 shares of no par value; **Grant Coal Co.**, of Fairmont, $450,000; **Stramer Fuel Co.**, of Charleston, $25,000; **Gulf Run Smokeless Coal Co.**, of Clarksburg, $300,000, and the **Superior Fuels Co.**, of Steubenville, Ohio, capitalized at $2,500,000.

It is reported that negotiations are again under way for a consolidation of a score or more of bituminous producers in non-union fields of West Virginia and Kentucky. Interests identified with Island Creek, Hardy Coal and Pond Creek have been approached in regard to a proposed consolidation. Strong efforts are being made to persuade Island Creek to enter such a merger.

The Melsh Coal Co., organized under the laws of Maryland, and with principal office at Hagerstown, Md., has been authorized to transact business in West Virginia.

Chafin Seeks Parole.—Don Chafin, former sheriff of Logan County, who figured in the labor troubles of that coal field, and who is now in the federal penitentiary in Atlanta, Ga., for violation of the prohibition laws, has paid his fine in full. Chafin had refused to pay the fine and appealed the case, but lost it. Settlement with the government was necessary because of his application to the federal parole board. Judge George W. McClintic sentenced him to serve two years in the penitentiary and fined him $10,000, which with costs in the trial brought the total up to $11,400. He was taken to prison eight months ago.

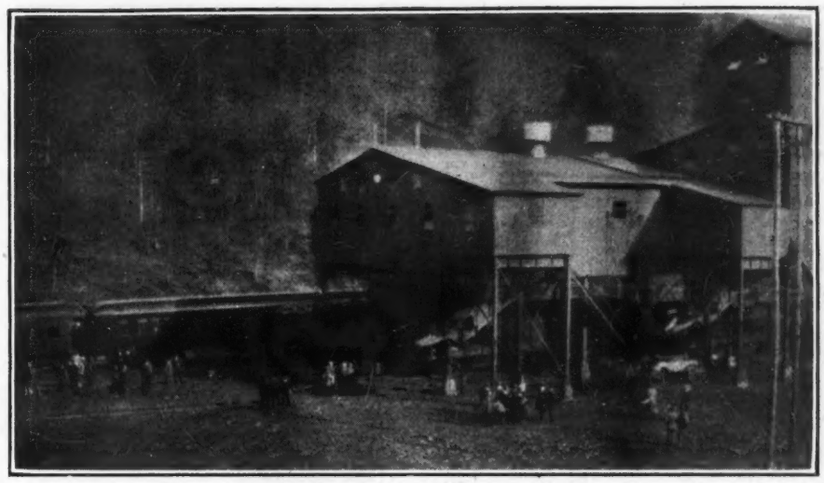
C. M. Moderwell & Co., of Chicago, has filed a certificate of withdrawal with the Secretary of State of West Virginia.

Mines along the Monongah Division of the Baltimore & Ohio R.R. in the Fairmont region loaded 294,100 tons of coal during the third week of May, an average of 980 cars a day, the highest record made since February.

The Clarksburg District Mining Institute held a meeting in Traction Hall, Clarksburg, May 22, after which it adjourned for the summer. The next meeting will be held the fourth Saturday night in September.

Property of Victor S. Veazey, of Fayetteville, formerly engaged in the coal mining business in Fayette County, recently was sold at public auction for $29,000. The residence at Fayetteville, acquired about six years ago, went to the New River & Pocahontas Consolidated Coal Co. for $21,000. The equipment at Veazey mine, near Glen Jean, was sold for $150 to a Mr. Turner, who is operating the mine.

The Gulf Run Smokeless Coal Co., Centralia, has 10,000 acres of land which it will develop.



Boarding the Special at No. 4 Mine

Stockholders of the Coal River Collieries Co. were taken on a special train from Huntington to inspect their three West Virginia mines. These mines are located in the Kanawha field on the Big Coal River branch of the Chesapeake & Ohio Ry. Each mine is equipped with a modern steel tipple. The company's production during 1925 with J. T. Dunigan as president and general manager was 632,189 tons, which is 303,589 tons more than the total output during the past five years.

CANADA

Coke Output Declines.—Production of byproduct and gashouse coke in Canada during April amounted to 149,357 tons, a decrease of 2 per cent from the March total, but an increase of 14 per cent or 17,873 tons over April, 1925. Cumulative production for the first four months of 1926 was 623,549 tons, as against 474,085 tons last year. Imports of coke in April were 51,146 tons, as against 102,485 tons in March. Exports were 3,673 tons, compared with 5,332 tons in the preceding month. Apparent consumption of coke in Canada for April was 196,830 tons, compared with 249,633 tons in March and 162,517 tons in April of last year.

Dunsmuir Development Spreads.—Canadian Collieries (Dunsmuir), Ltd., has announced that a 5-ft. seam of high-grade coal has been discovered at Timberland, and work has been started on a seven-mile line from Ladysmith, Vancouver Island, to develop the property. Geological conditions are said to be similar to those where the best coal on the island has been found. Where the seam first was uncovered it was 12 ft. thick, but 5 ft. is given as a conservative average. The property will be thoroughly explored with a diamond drill. Topographical conditions are said to be well suited for the development of a colliery. The discovery was made by George Smith, an employee of the Timberland company, which owns extensive logging limits to the north of Ladysmith.

Telkwa Opens New Seam.—Telkwa Collieries has opened a new seam of coal 9½ ft. thick, one mile farther up Goat Creek than its existing slope. At present the coal is delivered by wagon-road to Telkwa, on the Grand Trunk Pacific Ry., now part of the Canadian National system, but, later, the company purposes to construct a spur, connecting the mine with the railway. Most of the coal is shipped to Prince Rupert.

An Alberta syndicate has started to develop the Sir Sanford Fleming and William Merritt leases, at Anthracite, near Banff, on the Canadian Pacific Ry.'s main line, which have been idle for about a quarter of a century. The syndicate has secured 300 acres of coal land from the Canadian Cement Co. The coal is said to verge on an anthracite, and some of it found on the old dumps is said to be still in excellent condition.

Among the Coal Men

P. C. Thomas succeeds H. M. Bertolet as divisional superintendent of the New River & Pocahontas Consolidated Coal Co. Mr. Thomas was associated with the New River Co. for many years but more recently has been identified with Winding Gulf operations. For the time being Mr. Thomas will have his headquarters at Charleston, but it is possible that later his office will be moved to Fayetteville where the company has purchased the Veazey property.

In taking over the duties of divisional superintendent Mr. Thomas relieves Mr. Newhall of the Philadelphia office of the company who has been in charge temporarily since the retirement of Mr. Bertolet.

John Stafford has been appointed Chief Inspector of Coal Mines by the Government of Queensland, Australia. The son of one of the pioneers of the coal-mining industry in Ipswich, the principal coal district of that state, Mr. Stafford has been continuously connected with coal mines since his youth, working his way from mine worker to the position of manager, and subsequently to that of government inspector. For some years he was superintendent of state coal mines, and was appointed Chief Inspector on the passing of a revised Act of Parliament dealing with the coal branch of the mining industry of Queensland.

Dr. T. D. Scales, of Boonville, Ind., who formerly operated the large John Bull and Erie Canal coal mines, in Warrick County, has been appointed on a committee by the Boonville Business Men's Association to help bring new manufacturing enterprises to Boonville.

W. J. Rainey, Inc., has announced the appointment of **D. D. Dodge**, of Lonaconing, Md., in the Georges Creek field, as general superintendent of its eight large coal and coke operations in the Connellsville coke region, to succeed John Sincock, who resigned a couple of months ago. Mr. Dodge has taken up his new duties. Robert Woods, Jr., of Uniontown, assistant general superintendent, will continue in that position.

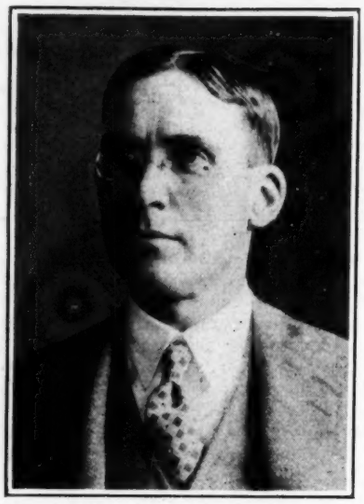
Otto Herres, assistant manager of the United States Fuel Co., Salt Lake City, has been elected chairman of the Utah section of the American Institute of Mining and Metallurgical Engineers. Mr. Herres is a mining engineer by profession and has served in Carbon County as a coal mine superintendent.

T. J. Thomas has been elected president of the Valier Coal Co., operating at Valier, Ill. This company is a subsidiary of the Burlington railway.

P. C. Thomas was appointed general superintendent of the New River division of the New River & Pocahontas Consolidated Coal Co. on June 1.

Edmund Ewing has been appointed superintendent of the Yolande and Connellsville mines of the Yolande Coal & Coke Co., succeeding E. L. Elliott, who died recently. Mr. Ewing served as superintendent of the Bessie mine division of the Sloss-Sheffield Steel & Iron Co. for about four years; later going with the Alabama Co., where he was asistant to J. E. Strong, operating vice-president of that company, at the time of its merger with the Sloss-Sheffield Company.

Erle Ormsby, president of the Donk Brothers Coal Co., has been elected president of the Downtown Lions' Club of St. Louis, Mo.



John D. A. Morrow

The new vice-president in charge of sales of the Pittsburgh Coal Co. assumed the duties of his new post on May 1. He has had a long and picturesque career in the coal industry, having been successively executive secretary of the National Coal Association, founder and president of the Morrow-Callahan Coal Co. and vice-president of the Joy Machine Co.

Andrew K. McKee, one of the best known anthracite men in Philadelphia, has resigned as vice-president in charge of retail sales, of the George B. Newton Coal Co. Mr. McKee's first connection in the trade was in a partnership known as McKee & Cox. Later Mr. McKee became the sole owner of the business developing an extensive retail trade under the name of McKee & Co. at 22nd St. & Allegheny Ave., which became one of the leading units of the Newton combination when it was formed in 1912. Mr. McKee has announced no definite plans for the future.

Vincent G. Thomas, of Johns Brothers, has been elected president of the Hampton Roads Coal Association, to succeed Oscar B. Ferebee, of Nottingham & Wrenn, who served two years. Herbert L. Wright, of Wright Coal & Wood Co., was elected vice-president and S. Harold Ferebee, of Norfolk Coal & Ice Co., was elected secretary and treasurer.

M. L. Hutchins, of the Byproducts Sales Co., and **Mr. Mayo**, of the Ford Motor Co., recently spent several days going over the Ford coal properties in Kentucky and West Virginia. So far, they said, no successor had been chosen to fill the position of general director held by the late Abner Lunsford.

Obituary

Lawrence Huntington Starkweather, of the O'Gara Coal Co., Chicago died in the Johns Hopkins Hospital at Baltimore, Md. on Sunday, May 30. Mr. Starkweather was born in Chicago in 1891. He was educated in private schools and at the University of Chicago. At the outbreak of the World War he repeatedly tried to enlist in both the Army and Navy, but was unable to, so finally went into government service in the U. S. Department of Justice, Bureau of Investigation, where he served with a distinguished record.

In 1919 C. M. Moderwell, receiver for the O'Gara Coal Co. appointed Mr. Starkweather to represent the O'Gara Coal Co. in the northern Illinois and Wisconsin territory. Last Fall Mr. Starkweather's health began to fail, and he was operated on at St. Luke's Hospital in Chicago. This Spring it was decided that another operation was necessary, so Mr. Starkweather went on to Johns Hopkins Hospital at Baltimore, but died before the operation took place.

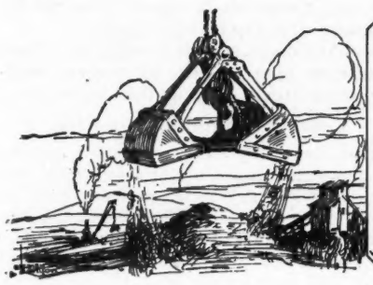
Edgar Lee Elliott, age 56, for the past eight years superintendent for the Yolande Coal & Coke Co., at Yolande, Tuscaloosa County, died May 28 of pneumonina after a short illness. Mr. Elliott was connected with the Hills Creek Coal Co. and a number of other mining operations before going with the Yolande company, where he had been employed for the past ten years. Mr. Elliott also had charge of the Connellsville mine of Yolande company, which was rehabilitated and placed in operation the early part of this year.

Traffic News

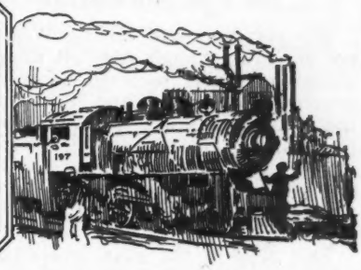
Increased Schedule Approved

The Public Service Commission of New York has approved a new schedule of the New York Central & Hudson R.R. (east) on coke breeze and coke dust in carloads of a minimum weight in open cars of 50,000 lb. (except that when car is loaded to full visible or cubical capacity the actual weight will apply but not less than 35,000 lb.) and when in box or stock cars 40,000 lb. This schedule applies from Buffalo, East Buffalo and Harriet to stations between Mertensia and Pittsford inclusive and sets a rate of $1.51 per net ton (a reduction on prior rates.) The schedule also provides that the rate to stations between East Williamson and Hannibal, inclusive, Metcalf Furniss, Oswego to Liverpool inclusive, Central Square, Brewerton and Clay shall be $2.27 (an increase of 1c.) per net ton, effective June 30, 1926.

The New York Public Service Commission has approved new rates of the New York, Ontario & Western R.R. on coke, coke breeze and coke dust from Utica to Clinton and New Hartford, $1.13; reduction 13c. per net ton—effective June 22, 1926.



Production And the Market



Bituminous Index Sags Somewhat but Conditions In Kentucky and Ohio are Favorable

Indications for a firmer market are not so readily visible as they were last week. Certain sections of the country have not responded to the improved condition, notably the Pennsylvania bituminous regions, Alabama and the Head of the Lakes. In the latter a severe price-cutting is bringing as a penalty, slow business, for the buyer is waiting to see whether he cannot get a still lower price. In Cincinnati and points served by eastern Kentucky coals the recent gains have been maintained. Ohio markets have been helped by the removal of the lake embargoes but are still unstable.

Production during the week ended May 29 improved considerably over that of the previous week and is not far below the average for the year, though that average has been unusually high. The calendar year to date has shown a production per day of 1,771,000 tons, whereas the average daily production for the week ending May 29 was no less than 1,611,000 tons. A year ago the daily tonnage for the week was only 1,508,000. The lake dumpings continue large though not nearly so great as those of the previous week. The lake movement is stimulating production in the fields which are able to take advantage of it. For the week ending June 6 the cargo dumpings on Lake Erie aggregated 1,089,342 tons, and bunker fuel totalled 52,445 tons.

Price Lower Than Last Week's

Coal Age Index of spot bituminous prices on June 7 was 157, the corresponding price being $1.90. Thus the index has declined 3 points and the price 4c. from the figures of May 31. These, however, are better values than were obtained in the week ending May 26.

An unsettling condition in Indiana and Illinois is the ability of the strip-pit mine to cut prices 50c. to $1 below the shaft mines and so to take the business away from them. These strip pits can work full time and have no difficulty in moving all their sizes.

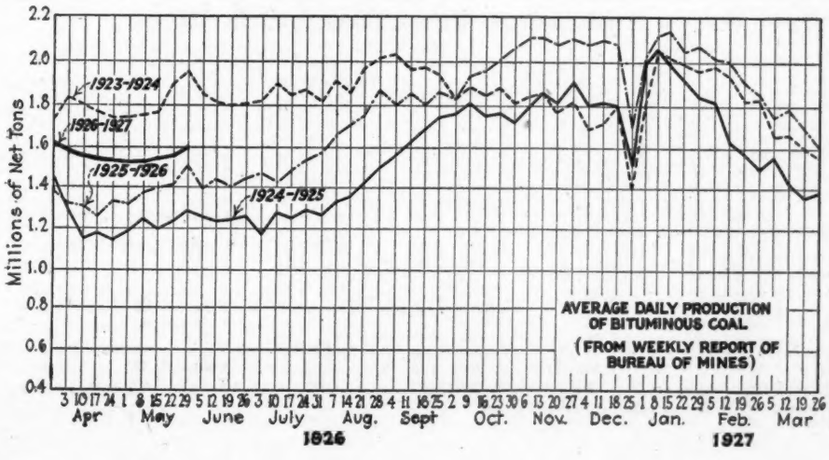
The demand for slack is more nearly equal to the output than before, but both strip and shaft mines are crushing larger coal to take care of their screenings contracts, the sale for lump not sufficing to provide the needed slack.

In Illinois, co-operative mining is again cutting in on the business of those operators who must pay the scale and cannot ask their mine workers to make good their losses. Utah is working more steadily. In contradistinction to the Head of the Lakes, the Utah coal fields are finding that price cutting has stimulated business and are now working 70 per cent of normal full-time capacity.

Complaints are heard about the hard-coal market and in fact it cannot be expected to maintain itself throughout the coal year. However, in the week of May 29 the estimated production was 2,088,000 tons as against 1,681,000 in the same week of the previous year and as against 1,750,000 tons in the previous week. Stove sizes are only in fair demand and all the other sizes lag somewhat except barley.

The dullness in the Connellsville coke market is now definitely to be recorded in a decline in price. The price for spot shipment has sagged 10c. a ton, and this decline will probably have its effect on third-quarter or second-half contracts.

Production in the Connellsville and Lower Connellsville region the fourth week in May showed a decrease of 5,340 tons from furnace ovens and 70 tons from merchant ovens. The total production for the week was 150,040 tons.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
May 15	8,350,000	9,299,000
May 22 (a)	8,451,000	9,282,000
May 29 (b)	8,141,000	9,663,000
Daily average	1,508,000	1,611,000
Cal. yr. to date (c)	195,595,000	224,724,000
Daily av. to date	1,550,000	1,771,000
ANTHRACITE		
May 15	1,950,000	1,904,000
May 22	1,708,000	1,750,000
May 29	1,681,000	2,088,000
Cal. yr. to date (c)	36,247,000	27,301,000
BEEHIVE COKE		
May 22	145,000	211,000
May 29	132,000	197,000
Cal. yr. to date (c)	4,664,000	5,780,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

Mid West Still Stagnant

Reports from the Middle West are not cheerful, though strip-pit mines in southern Illinois seem to be working practically full time, and like some of the shaft mines are crushing coal to take care of their screening contracts. At the shaft mines lump, egg and No. 1 nut are hard to move, but at the strip plants everything seems to go well because of the price.

This time of the year is always an off-season with the retailers in the Middle West, because neither will the public stock coal for house-heating nor the farmer buy it for threshing purposes. When the Franklin County operators decided not to raise their quotations as of June 1 they made an exceedingly wise move, because a raise could not be maintained in the face of the existing conditions. The West Virginia and eastern Kentucky operators, who raised their prices, would not be able to maintain them were it not for the fact that they have a dumping ground for their coal at the lake loading ports.

In the Jackson County and Duquoin field, two mines that are working are getting about three days a week. In the Mount Olive field railroad tonnage continues good, and the mines find it difficult to take care of steam sizes without crushing.

In the Standard field the co-operative mines are getting the business. Some of the mines without railroad contracts run from one to five days a week. Steam coal is in fairly good demand but at low prices.

St. Louis Buys Sparingly

At St. Louis a little cheap coal for tenement storage as well as other storage of the cheapest kind is going in but it is so small that it doesn't count. Dealers report anthracite tonnage as falling off perhaps one-half and smokeless is dropping off while coke is not as active as it might be. Indiana strip-pit mines are making prices anywhere from 50c. to $1 a ton below those quoted for coal from shaft operations in the Duquoin and Carterville fields.

No Arkansas coal is coming in. West Kentucky also is just at present selling some steam coal in this market.

Kentucky Maintains Position

The Kentucky fields are maintaining their recent gains. Running time has improved slightly in the eastern part of the state, where the lake and Southeastern markets are broadening. The movement of western Kentucky coal west and northwest is substantial for this time of the year. That section also enjoys some scattered business in the South.

The price situation is firm. Except for an inconsequential break on a small tonnage of eastern Kentucky slack, which sold down to $1.05, the general range of quotations is unchanged. It is becoming increasingly difficult, however, to pick up mine-run at the minimum price.

Eastern Kentucky 4-in. block is $1.75 @$2.25; lump, egg and nut, $1.75@$2;

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	June 8 1925	May 24 1926	May 31 1926	June 7 1926†
Smokeless lump	Columbus	$2.85	$3.10	$3.10	$3.00@$3.25
Smokeless mine run	Columbus	1.85	2.05	2.05	2.00@ 2.15
Smokeless screenings	Columbus	1.30	1.25	1.25	1.20@ 1.35
Smokeless lump	Chicago	3.10	3.10	3.10	*2.75@ 3.25*
Smokeless mine run	Chicago	1.95	2.00	2.00	*1.85@ 2.00*
Smokeless lump	Cincinnati	3.00	3.10	3.00	**3.00@ 3.25**
Smokeless mine run	Cincinnati	2.00	1.85	1.85	**2.00**
Smokeless screenings	Cincinnati	1.25	1.30	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.25	4.40	4.65	*4.40@ 4.60*
Clearfield mine run	Boston	1.75	1.80	1.80	1.65@ 1.95
Cambria mine run	Boston	2.10	2.05	2.10	1.90@ 2.25
Somerset mine run	Boston	1.95	1.90	2.00	*1.75@ 2.10*
Pool 1 (Navy Standard)	New York	2.55	2.60	2.60	2.50@ 2.75
Pool 1 (Navy Standard)	Philadelphia	2.60	2.65	2.65	2.50@ 2.80
Pool 1 (Navy Standard)	Baltimore	1.85	1.95	2.00	1.95@ 2.05
Pool 9 (Super. Low Vol.)	New York	2.00	2.10	2.05	1.90@ 2.25
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.10	2.10	2.00@ 2.25
Pool 9 (Super. Low Vol.)	Baltimore	1.75	1.75	1.80	1.75@ 1.85
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.85	1.85	1.75@ 2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.70	1.85	1.85	1.75@ 2.00
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.60	1.60	1.65	1.60@ 1.70
Pool 11 (Low Vol.)	New York	1.55	1.60	1.65	1.55@ 1.75
Pool 11 (Low Vol.)	Philadelphia	1.55	1.55	1.55	1.45@ 1.70
Pool 11 (Low Vol.)	Baltimore	1.40	1.45	1.60	1.55@ 1.65
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.40	1.40	1.30@ 1.55
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.45	1.25	1.40	1.40@ 1.45
Pittsburgh sc'd gas	Pittsburgh	2.40	2.25	2.25	2.20@ 2.30
Pittsburgh gas mine run	Pittsburgh	2.15	2.00	2.00	1.90@ 2.10
Pittsburgh mine run (St.)	Pittsburgh	1.95	1.80	1.80	1.75@ 1.90
Pittsburgh slack (Gas)	Pittsburgh	1.55	1.35	1.35	1.35@ 1.40
Kanawha lump	Columbus	2.10	2.05	2.05	1.85@ 2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.75
Kanawha screenings	Columbus	1.10	.90	.95	**.95@ 1.15**
W. Va. lump	Cincinnati	2.25	1.85	2.10	**2.00@ 2.50**
W. Va. gas mine run	Cincinnati	1.50	1.45	1.50	1.40@ 1.65
W. Va. steam mine run	Cincinnati	1.35	1.30	1.35	1.25@ 1.50
W. Va. screenings	Cincinnati	1.05	1.05	1.05	**1.10@ 1.25**
Hocking lump	Columbus	2.15	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.50	1.55	1.55	1.40@ 1.70
Hocking screenings	Columbus	1.30	1.05	1.10	1.00@ 1.20
Pitts. No. 8 lump	Cleveland	2.25	2.10	2.15	1.80@ 2.50
Pitts. No. 8 mine run	Cleveland	1.85	1.70	1.70	1.70@ 1.75
Pitts. No. 8 screenings	Cleveland	1.35	1.20	1.30	*1.25@ 1.30*

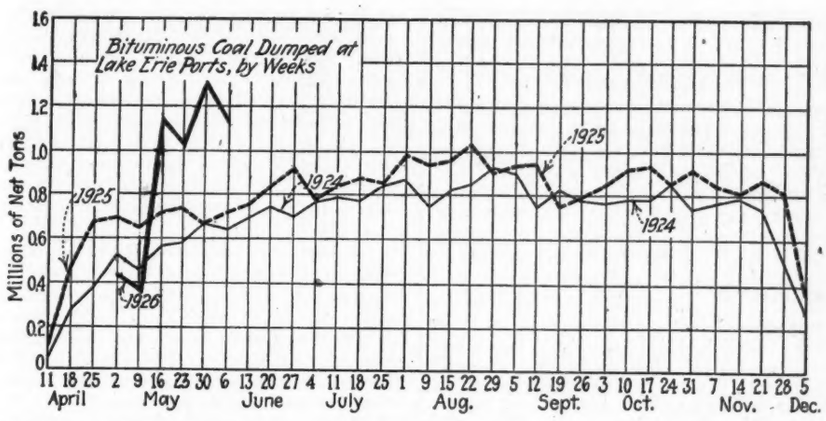
Midwest	Market Quoted	June 8 1925	May 24 1926	May 31 1926	June 7 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	*2.25*
Franklin, Ill. screenings	Chicago	2.10	1.90	1.90	*1.60@ 1.75*
Central, Ill. lump	Chicago	2.35	2.30	2.30	2.25@ 2.40
Central, Ill. mine run	Chicago	2.10	2.05	2.05	2.00@ 2.15
Central, Ill. screenings	Chicago	1.75	1.75	1.75	1.60@ 1.90
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.35	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	1.90	1.80	1.80	1.75@ 1.90
Ind. 5th Vein lump	Cnicago	2.25	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Cnicago	1.50	1.35	1.35	**1.35@ 1.50**
Mt. Olive lump	St. Louis	2.50	2.35	2.35	2.25@ 2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.55	1.55	1.50@ 1.60
Standard lump	St. Louis	2.25	2.25	2.25	2.25
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.30	1.30	1.25@ 1.40
West Ky. block	Louisville	1.60	1.75	1.75	1.65@ 1.85
West Ky. mine run	Louisville	1.30	1.20	1.20	1.00@ 1.40
West Ky. screenings	Louisville	1.15	1.10	1.10	1.00@ 1.25
West Ky. block	Chicago	2.00	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.95@ 1.35
South and Southwest					
Big Seam lump	Birmingham	2.40	2.15	2.30	2.05@ 2.55
Big Seam mine run	Birmingham	1.75	2.00	2.00	*1.75@ 2.00*
Big Seam (washed)	Birmingham	1.85	2.00	2.00	*1.75@ 2.00*
S. E. Ky. block	Chicago	2.25	2.40	2.40	2.10@ 2.75
S. E. Ky. mine run	Chicago	1.70	1.65	1.65	1.50@ 1.85
S. E. Ky. screenings	Louisville	2.20	2.05	2.00	1.75@ 2.25
S. E. Ky. block	Louisville	1.30	1.50	1.35	1.25@ 1.50
S. E. Ky. mine run	Louisville	1.05	1.10	1.15	1.10@ 1.25
S. E. Ky. block	Cincinnati	2.35	2.10	2.15	2.00@ 2.30
S. E. Ky. mine run	Cincinnati	1.45	1.50	1.50	1.25@ 1.75
S. E. Ky. screenings	Cincinnati	1.05	1.00	1.05	**1.00@ 1.25**
Kansas lump	Kansas City	4.00	4.00	4.00	4.00
Kansas mine run	Kansas City	3.00	3.00	3.00	3.00
Kansas screenings	Kansas City	2.60	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	June 8, 1925 Independent	June 8, 1925 Company	May 31, 1926 Independent	May 31, 1926 Company	June 7, 1926† Independent	June 7, 1926† Company
Broken	New York	$2.34	.....	$8.10@$8.70	.....	$8.25@$9.25	.....	$8.25@$9.25
Broken	Philadelphia	2.39	.....	8.60	$9.25	9.00@ 9.25	$9.25	*8.50@ 9.15*
Egg	New York	2.34	$8.50@$8.85	8.45@ 8.70	8.75@ 9.25	8.75@ 9.25	8.75@ 9.25	8.75@ 9.25
Egg	Philadelphia	2.39	8.70@ 9.30	8.50@ 8.70	9.25@ 9.75	9.15@ 9.25	9.15@ 9.85	*9.00@ 9.15*
Egg	Chicago*	5.06	7.86@ 8.50	7.44@ 8.18	8.48	8.13	.....	.....
Stove	New York	2.34	8.90@ 9.25	8.85@ 9.20	9.25@ 9.75	9.25@ 9.50	9.25@ 9.75	9.25@ 9.50
Stove	Philadelphia	2.39	9.30@ 9.65	8.95@ 9.10	9.60@10.00	9.35@ 9.50	**9.40@10.30**	9.35@ 9.50
Stove	Chicago*	5.06	8.22@ 8.70	7.92@ 8.10	8.84	8.33@ 8.58	.....	.....
Chestnut	New York	2.34	8.25@ 8.50	8.45@ 8.70	8.75@ 9.25	8.75@ 9.15	8.75@ 9.25	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.70@ 9.55	8.60@ 8.70	9.25@ 9.50	9.00@ 9.15	**9.00@10.05**	9.00@ 9.15
Chestnut	Chicago*	5.06	8.14@ 8.35	7.69@ 8.00	8.71	8.38@ 8.50	.....	.....
Pea	New York	2.22	5.00@ 5.50	5.00@ 5.70	6.25@ 7.00	6.00@ 6.25	6.25@ 7.00	6.00@ 6.25
Pea	Philadelphia	2.14	5.50@ 5.75	5.00@ 5.40	6.50@ 7.00	6.00@ 6.50	*6.25@ 6.75*	*6.00@ 6.35*
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	6.03	5.65@ 5.80	.....	.....
Buckwheat No. 1	New York	2.22	2.00@ 2.50	2.50	1.70@ 2.35	3.00@ 3.50	*1.75@ 2.25*	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.15@ 2.75	2.50	2.00@ 2.50	2.50@ 2.75	**2.15@ 2.50**	2.50@ 2.75
Rice	New York	2.22	1.75@ 2.00	2.00	1.50@ 1.85	2.00@ 2.25	1.50@ 1.85	2.00@ 2.25
Rice	Philadelphia	2.14	1.85@ 2.00	2.00	1.75@ 2.25	2.00@ 2.25	*1.75@ 2.00*	2.00@ 2.25
Barley	New York	2.22	1.35@ 1.50	1.50	1.20@ 1.50	1.50@ 1.75	1.20@ 1.50	1.50@ 1.75
Barley	Philadelphia	2.14	1.40@ 1.50	1.50	1.50@ 1.60	1.75	**1.50@ 1.75**	*1.50@ 1.75*
Birdseye	New York	2.22	1.60@ 1.75	1.60	1.30@ 1.60	2.00	1.30@ 1.60	2.00

* Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**; declines in *italics*.



slack, $1.10@$1.25; mine-run, $1.25@$1.50. Some mine-run still is quoted at $1.65, but little business is done on that basis. Western Kentucky 6-in. block is $1.65@$1.85; lump and egg, $1.40@$1.65; nut, $1.35@$1.50; mine-run, $1@$1.40; screenings, $1@$1.25.

Dock Prices Demoralized

The price war at the Head of the Lakes grows more bitter. At the outset only three companies were involved, but the other docks have been forced to cut prices in self defense. Pocahontas lump, held at $7 a fortnight ago, has sold at $4.50. Youghiogheny screenings are offered as low as $3.75.

Industrial consumers are indifferent to contract renewals while this price war lasts. Buying for current needs, however, holds up. Retail purchases are light, and consumers again are showing apathy on the question of summer storage of anthracite. Receipts from the lower ports have declined, but the movement is fairly heavy. The most recent weekly report shows 50 cargoes, including 4 of anthracite, unloaded, and 21 cargoes en route.

Waiting to Reach Bottom

Buyers at St. Paul and Minneapolis are delaying their orders, some in the hope that the freight rate from southern Illinois and Indiana to the Northwest will be revised by the courts if the case is reopened as is hoped. However, conditions seem better this Spring than in a number of years. Southern Illinois lump is $2.60 per ton at the mine, Central Illinois $2.25 and western Kentucky $1.75.

Receipts of bituminous coal at Milwaukee from Lake Erie shipping ports are heavy—702,220 tons up to June 3, as against 493,260 tons received up to the same date last year. Anthracite is away behind last year's record, but is coming in more freely now. The receipts up to June 3 total 101,000 tons. Last year during the same time 239,055 tons were received.

Stove-size Pocahontas has been cut $1 a ton, and egg and lump 75c. The prices now are $9.75 for stove, $10 for egg and $10.25 for lump, spouted, and an extra charge of 75c. when carried to the bins.

Arkansas More Active

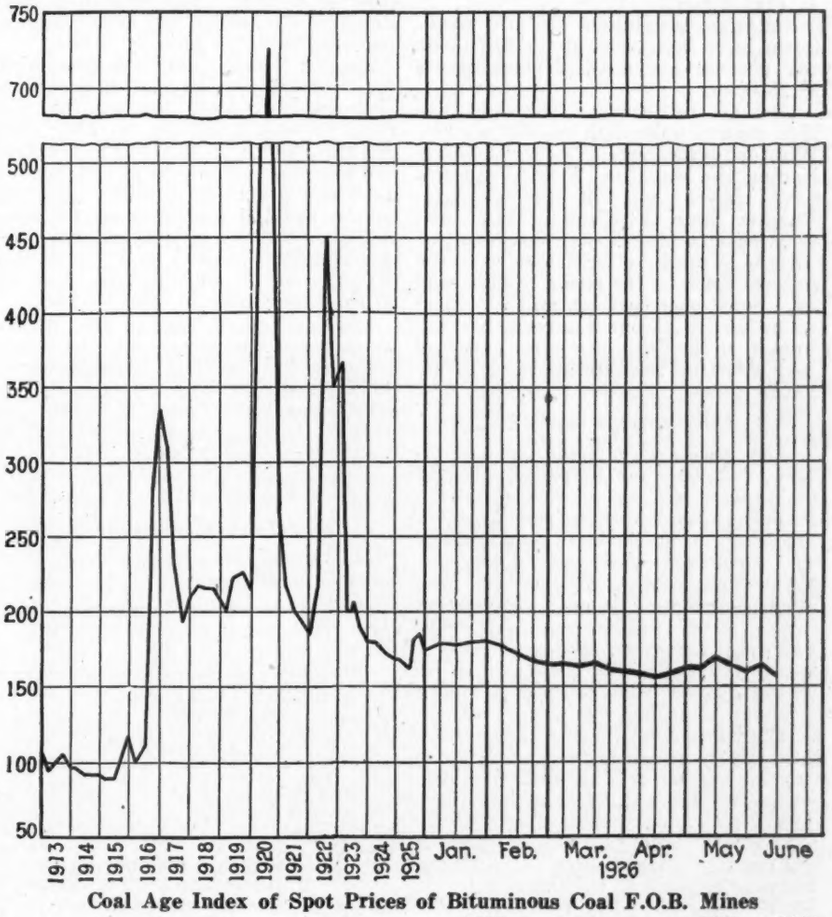
Storage orders for Arkansas semi-anthracite increased sharply during the last week of May and there was an overflow into the first few days of June. Householders were anxious to get coal booked before retail prices advanced. Threshing orders for Kansas coal also are heavier. Storage buying, however, has not yet reached substantial proportions, but an early gain in that direction is expected.

The Colorado market is sluggish with no assurance of any early improvement. Producers and distributers have been scouring the territory for business, but the results of their efforts have been disappointing. Prices are unchanged. The Colorado field is operating on a 50-per cent basis. The Utah price campaign for domestic business has boosted buying above last year's figures, but not to the extent desired. Wyoming prepared grades are holding at $3.50; slack is $1.50.

Working time at the Utah mines as a result of the big reduction in prices on larger sizes, has jumped to around four days a week, and about 70 per cent of normal full-time capacity, taking the state as a whole. Some of the mines are working full time, but others are operating about three days a week. Retailers are stocking up to the limit of their ability, financial and storage. A price of $7 and $6.50 c.o.d. for lump—seems to warrant buying activity seeing that the price has been $9 for so long.

Prices Hold at Cincinnati

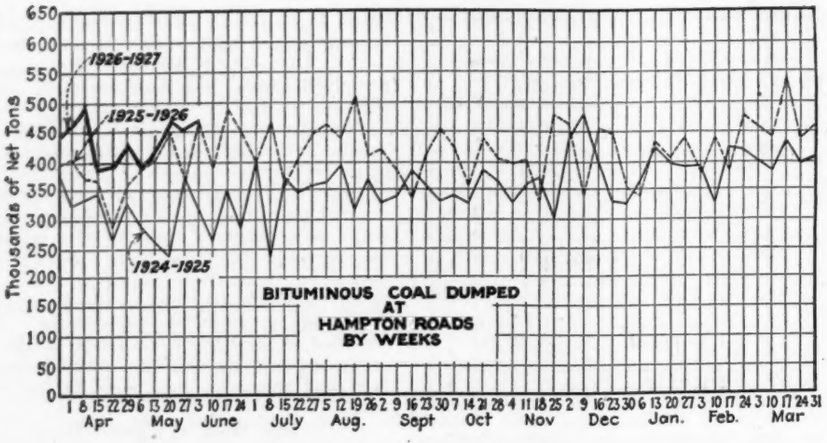
Prices have moved up a step on this market and from the advances made there has been little or no wavering. Tidewater inquiries and even sales have been stronger than for months past, this being true of both high and low volatile. Lake buying has been liberal and, with the lifting of the embargoes against Sandusky, which for a time disconcerted things, this factor has been of supreme importance. The disposition of Chicago and intermediate markets to buy has also had an



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1916				1925	1924
	June 7	May 31	May 24	May 17	June 2	June 9
Index	157	160	157	159	161	170
Weighted average price	$1.90	$1.94	$1.89	$1.93	$1.95	$2.06

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.



influence as has the booking of orders for later delivery to Iowa and the northwest.

The spot market on low-volatile lump has been especially bright, the circulars, it seems, have undershot the mark on this, some spot coal selling up to $3.25 with several of the standard producers of Pocahontas and premium New River asking that price. The egg failed to move above the $3 mark but mine run stiffened to $2 and is firm at that figure.

Smokeless screenings are still weak. Some have been sold up to $1.50 but the general range of the market is $1.25-$1.35.

Greater betterment, however, has been shown in the high-volatile market. With one large Logan County producer leading the way, the West Virginians have moved up all their prices. Thacker lump is selling at $2.25 and so is some of the Kanawhas. Run of mine is in much better demand and the general price on the steam is $1.35 and up. Some poor coal can still be picked up around $1.25 but it takes a bargain hunter to find it. No move has yet been made by the retailers here to advance prices.

Ohio Markets Unstable

Spot prices at Columbus are less erratic, following the lifting of the lake embargoes, but the market still lacks stability. General industrial buying is confined to immediate requirements, and some consumers are going into their storage piles. Utility and railroad consumption is on a satisfactory scale. Many railroad contracts, however, still hang fire. Domestic trade is possibly a little above the average as school buying helps to swell the total volume.

The lake movement is benefitting the Ohio fields in an indirect manner by making the competition with West Virginia and Kentucky for all-rail orders less keen. Nevertheless, output in the southern Ohio districts is only about 18 per cent of normal, and much of this tonnage is going to the railroads.

Eastern Ohio Ships More

Eastern Ohio is shipping a little Lake coal and this is reflected in a slight increase in output. During the week ended May 29 the No. 8 district produced 205,000 tons or a little less than 30 per cent of capacity, which was 17,000 tons over the preceding week but 1,000 tons more than a year ago. Pocahontas lump is quoted at $3 a ton, f.o.b. mines and some dealers are said to be buying and storing it.

Pittsburgh Outlook Darker

Notwithstanding the increase in the commercial production of non-union coal in the Pittsburgh district, the market situation is less attractive than it was earlier in the season. Prices are not quotably changed, but the undertone is weaker. The difficulties surrounding the sale of coal in this market multiply with the passing weeks.

Central Pennsylvania also complains. May shipments from that district were approximately 2,000 cars less than the total for the preceding month. Only one-third of the 1,256 mines in this field are working and only 55 of this number are running six days a week. The bulk of the railroad buying is on the open market. Prices are weaker. Pool 1 is $2.35@$2.50; pools 9 and 71, $2.25@$2.40; pool 10, $1.90@$2.15; pool 11, $1.65@$1.90; pool 18, $1.60@$1.80.

Nominal quotations in the Buffalo market are unchanged, but there is a stronger tone to slack. Business generally, however, is dull. Some of the wholesalers have dipped into anthracite to keep their organizations busy. With independent prices down to or below company schedules, there is little chance for a big turnover in this trade.

New England Unstimulated

The steam-coal market in New England drags along without material change. Not even the tonnage requisitioned in place of British output is sufficient to provide any real stimulus, and spot prices on Hampton Roads coals are actually lower than a week ago. There is no buying of any moment in the coastwise trade and among the industries there is only mild interest in current prices. There is perhaps a better business undertone than a month ago, but not yet is this translated into any noticeable increase in manufacturing.

Pocahontas and New River of Navy standard grade could be purchased a day or two ago at $4.40, with occasional sales at $4.50 and $4.55. Accumulations are less than has heretofore seemed habitual, but from this it is never safe to predict that any organized curtailment is in effect.

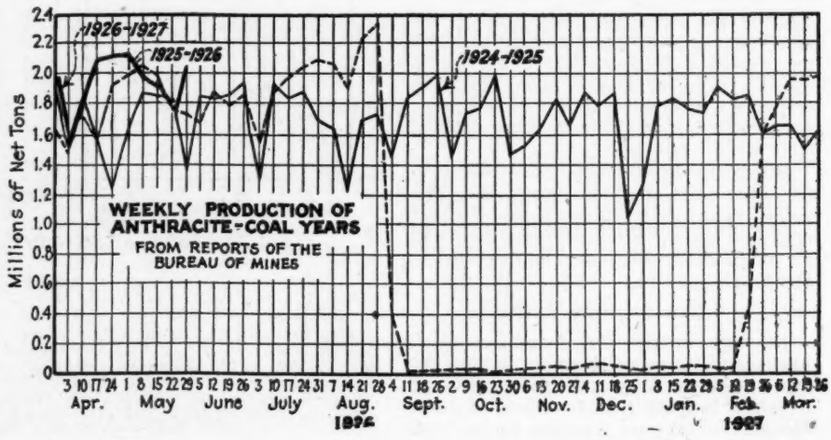
For inland delivery the course of prices the past week has been much the same. Quotations have wavered with fresh arrivals, and in nearly every case where factors have their own facilities the wharves are piled high with storage coal.

New York Market Quiet

The New York bituminous market is quiet. Industrial consumption, however, is heavy, but buyers show no interest in accumulating new reserves. On the favorable side of the situation are the increase in the number of inquiries from foreign buyers and the disappearance of distress tonnage at the tidewater piers.

Philadelphia, too, is marking time. The optimists, however, think they see evidence of a slowly awakening interest on the part of consumers and here and there a customer has ordered a little more than his current requirements. Demand for slack, particularly from the cement mills, is strong. Prices, nevertheless, are stationary. Some in the trade believe that the quietness among local industrial users is due to the slowing down of the building trades, which this year are not as active as last.

With production keeping ahead of demand, Baltimore factors find nothing in the current domestic situation to invoke enthusiasm. Export possibilities flowing out of the British strike offer more comfort. Bunker business has increased, and more cargoes have been loaded for foreign consignment. This demand, however, has not been strong enough to bolster up prices on coal for home consumption. Prices are, therefore, approximately the same despite this foreign demand, which, although perceptible is not brisk.



Car Loadings and Supply

	Cars Loaded — All Cars	Coal Cars
Week ended May 24, 1926.....	1,039,385	165,212
Preceding week.....	1,030,162	167,673
Week ended May 23, 1925.....	986,201	151,548

	Surplus Cars — All Cars	Coal Cars	Car Shortages — All Cars	Coal Cars
May 23, 1926.	259,788	82,304	.....	.....
May 15, 1926.	259,699	90,295	.....	.....
May 22, 1925.	327,216	134,669	.....	.....

Birmingham Market Featureless

The Birmingham market has settled down to a quiet, featureless position. Spot orders and inquiries are less than at any time previous this year. It becomes harder to move the medium and lower-grade coals. In a few cases, the railroads have reduced their weekly quotas, but the contract market as a whole holds up well and there are even a few straggling renewals on industrial business reported. The metallurgical coke market is fairly active. Domestic coke is quiet. Movement of domestic coal also is slowing down.

Anthracite Begins to Lag

Chestnut is the most backward of the larger anthracite sizes on the New York market at the present time. Egg also shows a tendency to drag. Stove, on the other hand, seems to be in fairly good demand. Movement from retail yards to the consumers' bins also keeps up. Circular prices were not changed on June 1. Buckwheat is a drug, rice is almost as bad; barley is the most active of the steam sizes.

The Philadelphia anthracite trade is less favorably situated. Company schedules are maintained, but independents no longer make any pretense that they can maintain their premiums. Some of the individual shippers are now soliciting business at company circulars and the others are glad if they can get 10@30c. over those figures. Retail buying reflects the disinclination of the householder to store coal before July or August. The steam trade is sluggish. There has been no change at Baltimore.

Shipments Have Declined

Lake shipments of anthracite from Buffalo during the week ended June 3 totaled 66,600 net tons. Of this quantity, 24,500 tons were cleared for Milwaukee; 16,000 tons for Duluth and Superior; 13,500 tons for Chicago; 6,600 tons for Green Bay and 6,000 tons for Sheboygan. The total loadings up to June 1 were 256,600 tons, as compared with 684,434 tons for the corresponding period a year ago.

Spot Coke Drops a Dime

Spot prices on Connellsville furnace coke broke 10c. last week, when the minimum dropped to $2.75 and small lots could be bought at $2.90. Spot foundry coke holds to the $4@$4.50 level, but there is practically no business to be had. The break in spot furnace prices probably will affect third quarter and second half contracts and force them below the $3 basis. Production in the Connellsville and Lower Connellsville fields during the week ended May 29 totaled 150,040 tons, according to the Connellsville *Courier*. Furnace-oven output dropped 5,340 tons and merchant-oven production declined 70 tons.

New York Anthracite Prices For June, 1926

(Per Gross Ton, f.o.b. Mine)

	Broken	Egg	Stove	Nut	Pea
Hudson Coal Co..	$9.00	$9.00	$9.35	$9.00	$6.00
Phila. & Reading Coal & Iron Co...	9.15	9.15	9.40	9.15	6.25
D.,L.&W. Coal Co.	8.25	8.75	9.25	8.75	6.00
Lehigh & Wilkes-Barre Coal Co...	8.25	8.75	9.25	8.75	6.00
Lehigh Valley Coal Sales Co.....	8.50	9.00	9.35	9.00	6.00
Lehigh Coal & Navigation Co...	9.25	9.25	9.50	9.10	6.25
M. A. Hanna.....	9.00	9.25	9.60	9.25	6.50

Steam sizes: Buckwheat No. 1, $3 to $3.50; rice, $2 to $2.25; barley, $1.50 to $1.75; birdseye, $2.

Average Daily Coke Output Declines Further in April

Production of byproduct coke in April showed a falling off of 175,000 net tons compared with that in March, according to the U. S. Bureau of Mines. This was not solely due to the shorter month, for there was a general slowing down of operations to about 88 per cent of capacity, causing a decrease in the daily rate of output. The total tonnage for April was 3,602,000, with an average daily production of 120,000 net tons; comparable figures for March were 3,777,000 tons and 122,000 tons, respectively. During April the plants operated at 91 per cent of capacity. Eighty-one plants are now in existence, 75 of them active in April. One new plant began production during the month.

Beehive coke continues its downward trend, with an estimated production of 981,000 net tons in April. This was 177,000 tons, or 15 per cent, lower than in March, which, in turn, had an output that was 17 per cent less than that of February.

Output from all the coke plants was 4,583,000 tons, 79 per cent from the byproduct ovens and 21 per cent from beehive ovens.

Output of Byproduct and Beehive Coke in the United States by Months*

(In Thousands of Net Tons)

	Byproduct Coke	Beehive Coke	Total
1923 monthly average...	3,133	1,615	4,748
1924 monthly average...	2,833	806	3,639
1925 monthly average...	3,332	893	4,225
January, 1926.....	3,804	1,381	5,185
February, 1926.....	3,500	1,402	4,902
March, 1926.....	3,777	1,158	4,935
April, 1926.....	3,602	981	4,583

* Excludes screenings and breeze.

Coal consumed in beehive and byproduct coke plants in April totaled 6,723,000 tons; 5,176,000 tons at byproduct plants and 1,547,000 tons at beehive plants. This was 529,000 tons less than was used for this purpose in March.

Estimated Monthly Consumption of Coal in Manufacture of Coke

(In Thousands of Net Tons)

	Byproduct Ovens	Beehive Ovens	Total Coal
1923 monthly average...	4,523	2,507	7,030
1924 monthly average...	4,060	1,272	5,332
1925 monthly average...	4,787	1,371	6,158
January, 1926.....	5,466	2,178	7,644
February, 1926.....	5,029	2,212	7,241
March, 1926.....	5,426	1,826	7,252
April, 1926.....	5,176	1,547	6,723

Of the total output of byproduct coke during April, 2,982,000 tons, or 82.8 per cent, was made in plants associated with iron furnaces, and 620,000 tons, or 17.2 per cent, was made at merchant or other plants.

British Operators Visit New Orient

Apparently the suspension of coal mining in Great Britain afforded F. B. Richards, of the Woodall Duckham Co., and John Bingley, of the Bolsover Collieries Co., an opportunity to study coal mining in America. The above snapshot was taken May 19 as the party was about to step on the cage of the auxiliary shaft to be lowered into Orient No. 2 mine of the Chicago, Wilmington & Franklin Coal Co., West Frankfort, Ill. From left to right are Albert Mitchell, St. Louis; F. B. Richards; John Bingley; Jos. Louis general superintendent of the Chicago, Wilmington & Franklin Coal Co., Benton, Ill., and M. C. Mitchell, manager of the St. Louis branch of the Sullivan Machinery Co.

Foreign Market And Export News

French Production Heavy

Paris, France.—The British strike is causing maximum production of coal in France. May output is estimated to be less than that of April, however, because of several holidays.

Imports from Great Britain are negligible, while those from Belgium and Germany, particularly the Ruhr district, have increased sharply and it is believed that the receipts from that district will probably increase further as import restriction freeing German fuels have been temporarily waived, although not officially lifted. Consumers of both domestic and industrial fuels continue to pyramid orders for stocks, fearing a shortage and further depreciation of the franc, but deliveries are impossible on these supplementary orders.

Prices for French coals are up by ten to twelve per cent since May 1, but are still below the level which the French consider necessary for profitable purchase of American coals. If the strike continues, sharper price increases are expected in France. Sales of Ruhr coal on the west coast and at Rouen are heavy, quotations at Rouen on mine run being 135 fr. per ton, which price has not been changed since May 1. Washed pea coal is 160 fr. per ton, an increase of 23 fr. since May 1. No English quotations are being offered for these ports. French mine-run is priced around 150 fr. at Rouen. French coal is now used for bunkering, including the English Channel ports.

Belgian Prices Rising

Coal prices are increasing rapidly and mine owners are unable to accept all orders, says a cable from Brussels, to the Department of Commerce. The low franc exchange eliminates foreign competition and partly explains the good demand from France, Switzerland and the Netherlands.

April production of coal in Belgium totaled 1,984,000 metric tons as compared with 2,132,890 in March and 1,894,470 tons in February. Stocks at mineheads amount to 1,290,000 metric tons.

A five per cent wage increase, effective June 1, has occurred in the metallurgical and coal industries.

Dutch Market Active

England is now out of the Dutch market as an exporter and is purchasing in limited quantities, says a cable report from The Hague to Washington. The Dutch market has advanced as a result of the English strike. Westphalian gas flame was quoted at 12 guilders ($4.824); foundry coke, 16 guilders ($6.432) and bunkers, 13.50 guilders ($5.427) c.i.f. Rotterdam.

Dutch coal production in March was 760,000 metric tons, a new high record. Exports in April were 452,000 tons compared with 423,321 in February. Of the amount exported in April Belgium took 135,000 tons.

Imports in April were 680,000 metric tons, compared with 428,176 in March and 754,605 in February. Of the April imports, Germany furnished 548,000 tons and England, 111,000 tons. In February Germany supplied 630,496 tons and England, 104,727 tons.

German Output Larger

Berlin, Germany—Coal production in May will show an increase, without overtime, to meet increased demands resulting from the British coal strike, April production was 10,000,000 metric tons, compared with 11,400,000 in March and 10,500,000 tons in February. Lignite production in April was 10,000,000 tons, compared with 11,800,000 tons in March and 11,115,385 tons in February, while coke production was 2,000,000 tons in April compared with 2,485,291 in March and 1,984,765 tons in February.

Ruhr stocks decreased from 8,500,000 tons at the close of April to 8,200,000 tons at the end of May. The Ruhr stocks are mostly fine coal and coke while the export demand is for gas and bunkers or the decrease would have been greater. Prices are unchanged and movements normal.

Spanish Output Shows Slight Decline

Spanish coal production in 1925 amounted to 6,252,000 metric tons. Bituminous output was 5,559,000 tons, of that total, while the remainder was divided between anthracite and lignite. The quantity of anthracite and lignite mined slightly exceeds that brought to the surface in 1924. The increase, however, is outweighed by the decline in bituminous production.

The royal decree recently enacted by the Spanish government in an effort to improve conditions in the Spanish coal mining industry has resulted in considerable optimism. The Spanish fleet and a few of the industries controlled by the Spanish government which heretofore have been using British coal have commenced, it is said, to use the Spanish product, thus permitting the Asturian mine operators to dispose of the stocks that they had on hand for some time.

Soviet Coal Fields Improving

Coal production in the Soviet Union for the first half of the current Soviet fiscal year, Oct. 1 to April 1, showed an increase of 44.4 per cent over the same period of last year, according to a bulletin received by the Russian Information Bureau at Washington, D. C. The output was 12,410,000 metric tons, as compared with 8,596,000 tons. The advance in production was carried out as planned in accordance with domestic requirements and the growing exports to Italy and other countries. Production was at 91 per cent of the rate for 1913.

Much new equipment, purchased in the United States, Germany and England, is being installed in the Soviet coal fields. During the current year upwards of $40,000,000 will be expended on re-equipment and extensions. Of 180 cutting machines being installed in the Don Basin, 140 were purchased in the United States. During the summer thirteen large new shafts will be opened in the Don Basin.

Export Clearances, Week Ended June 3

	Tons
FROM HAMPTON ROADS	
For Dutch East Indies:	
Du. Str. Veendyk	3,052
For United Kingdom:	
Dan. Str. Nordkap	5,080
Br. Str. Monkton, for Land's End	1,483
For Brazil:	
Br. Str. Trevean, for Rio de Janeiro	6,319
Br. Str. Swinbourne, for Para	97
Br. Str. Llangorse, for Rio de Janeiro	6,296
Br. Str. Portcurno, for Rio de Janeiro	6,249
For Africa:	
Ital. Str. Monviso, for Dakar	6,822
Fr. Str. Mont Viso, for Algiers	4,146
Ital. Str. Grazia Forzo, for Dakar	3,443
For Spain: :	
Br. Str. Holtby, for Malta	5,353
For Canada:	
Ital. Str. Operosita, for Three Rivers	7,092
For Cuba:	
Nor. Str. Ada, for Havana	3,815
For Martinique:	
Br. Str. Kelsomoor, for Fort de France	4,957
FROM BALTIMORE	
For England:	
Nor. Str. Hesperos, for Plymouth	7,734
Br. Str. Blythmoore, for Dover	9,374
For Irish Free State:	
Br. Str. Sheaf Spear, for Queenstown	4,078
For Italy:	
Ital. Str. Emanuels Accame, for Savona	11,504
Ital. Str. Ardito, for Leghorn	7,770
FROM PHILADELPHIA	
For Cuba:	
Dan. Str. Nordan, for Habana	——
Nor. Str. Lisbeth, for Habana	——

Hampton Roads Coal Dumpings*

(In Gross Tons)

	May 27	June 3
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	163,595	149,842
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	93,754	85,260
C. & O. Piers, Newport News:		
Tons dumped for week	150,259	182,954

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

	May 29	June 5†
PIERS		
Pool 1, New York	$5.50@$5.75	*$5.45@$5.70*
Pool 9, New York	4.90@ 5.20	*4.90@ 5.15*
Pool 10, New York	4.70@ 4.85	*4.65@ 4.85*
Pool 11, New York	4.40@ 4.65	*4.35@ 4.55*
Pool 9, Philadelphia	4.95@ 5.30	4.95@ 5.30
Pool 10, Philadelphia	4.70@ 5.00	4.70@ 5.00
Pool 11, Philadelphia	4.35@ 4.65	4.35@ 4.65
Pool 1, Hamp. Roads	4.45@ 4.50	4.45@ 4.50
Pool 2, Hamp. Roads	4.10@ 4.15	**4.20@ 4.30**
Pool 3, Hamp. Roads	4.00@ 4.10	4.00@ 4.10
Pools 5-6-7, Hamp. Rds.	4.00@ 4.10	*3.90@ 4.00*
BUNKERS		
Pool 1, New York	$5.75@$6.00	*$5.70@$5.95*
Pool 9, New York	5.15@ 5.45	*5.15@ 5.30*
Pool 10, New York	4.95@ 5.10	*4.90@ 5.10*
Pool 11, New York	4.65@ 4.90	*4.60@ 4.80*
Pool 9, Philadelphia	5.21@ 5.55	5.20@ 5.55
Pool 10, Philadelphia	4.95@ 5.25	4.95@ 5.25
Pool 11, Philadelphia	4.60@ 4.90	4.60@ 4.90
Pool 1, Hamp. Roads	4.50	4.50
Pool 2, Hamp. Roads	4.15	**4.30**
Pools 5-6-7, Hamp. Rds.	4.00@ 4.10	**4.10**

†Advances over previous week shown in **heavy type**; declines in *italics*.

Coming Meetings

American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Illinois Mining Institute. Annual summer meeting on steamer "Cape Girardeau," leaving St. Louis, Mo., June 24 and returning June 26. Secretary, Frank F. Tirre, Central National Bank Bldg., St. Louis, Mo.

American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Illinois and Wisconsin Retail Coal Dealers' Association. Thirty-first annual convention, Highland Hotel, Lake Delavan, Wis., June 28-30. Managing Director, N. H. Kendall, Great Northern Hotel, Chicago, Ill.

Fifth International First-Aid and Mine-Rescue Contest, San Francisco, Calif., during the first week of September, 1926, under the auspices of the Bureau of Mines, Department of Commerce.

Coal Mining Institute of America. Annual meeting, Chamber of Commerce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

New Companies

A new coal company has been organized in Wheeling, W. Va., to be known as the **Kanawha Block Coal Co.,** with the following incorporators: John D. Thomas, of Charleston, W. Va.; Cecil H. Riggs, W. C. Gardner and Joseph Styche, of Wheeling, and H. O. Walls, of Martins Ferry, Ohio. The company has 200 shares of stock of no par value. The company's offices are in the Wheeling Steel Corporation Building, at Wheeling. The officers of the firm have not as yet been selected. The company owns coal lands in the Kanawha district about twenty miles from Charleston.

The Federal Fuel Corp. has been chartered in Louisville, Ky., by F. N. Meadows, H. K. Lawrence and others.

The Cliff Nelson Coal Co., Toledo, Ohio, has been chartered with a capital of $10,000 to mine and sell coal. Operations will be started in the southern Ohio field. The incorporators are Clifford F. Bechtel, Nels I. Gustafson, William H. Murphy, T. R. Jones and George S. Moss.

The Marcum Horse Creek Coal Co. was incorporated in Hima, Ky., recently by W. W. Marcum, Ray Price and others.

The Home Coal Co., Hillsville, Ill., was incorporated April 1 to operate a mine at that town.

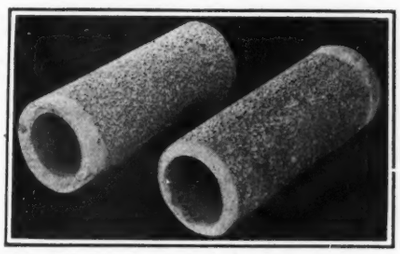
New Equipment

Water Enters Pipe Freely From All Sides

In the accompanying illustration may be seen the Rapid Drainage Pipe manufactured by the Walker Cement Products Co., of Little Ferry, N. J. This pipe, or tile, which originated in Europe, is made of crushed rock and cement. These materials are so mixed and forced together as to afford great strength yet afford a porous wall through which water may enter from all sides.

One of the big problems in drains that must resist the action of frost is to provide for the admission of the water that is to be carried away. Unglazed drain tile permits the entrance of water, but freezing shatters it. Glazed sewer pipe is unaffected by frost but its walls are impervious to water. This new product is said to combine the good qualities of both these drains, permitting the ready passage of water through its walls and yet being unaffected by freezing.

This new product has been applied extensively in difficult municipal and railroad drainage problems and excellent results are said to have been obtained. It will be particularly advantageous for draining sites where a high rate of permeation or influx as well as immunity from the effects of freezing are requisites. It is at present manufactured with internal diameters of 3½, 5½ and 8 in. and in 18-in. lengths. The ends are made male and female cones so that tight joints are assured. Tree roots are said to penetrate this tile only with great difficulty.



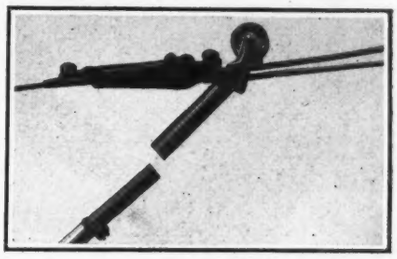
Water Enters Pores of Pipe; Frost Does Not Harm It

These tile are made of crushed rock and cement. The interstices between the aggregates are thus sufficiently open to admit water freely from all sides. Because of the indestructible character of the materials used, however, frost is said to have little or no effect upon them.

Pull Releases Wheel Without Breaking Pole

Broken trolley poles are a source of danger and delay. When a wheel comes off the wire, it may not only catch in a frog and tear down the wire, but break the trolley pole also. A safety pole-head designed to prevent the breaking of the trolley pole in case it comes off of the wire and catches in a frog or the like is now available.

This pole-head, sold by the C. & S. Pole-Head Co., Keystone, W. Va., is shown in the accompanying illustration. It consists of a socket to which the harp is attached, and a tapered pole end to which the cable is connected. The socket slips over the pole end and is held firmly but not tightly by a spring clip. A sharp blow or a heavy pull will cause the socket and its wheel to fall free of the rest of the pole.



Pole Pulled Apart Shows Details

A spring catch of the friction rather than positive type holds the socket on to the pole end. A heavy pull frees the trolley wheel, instead of breaking the pole.

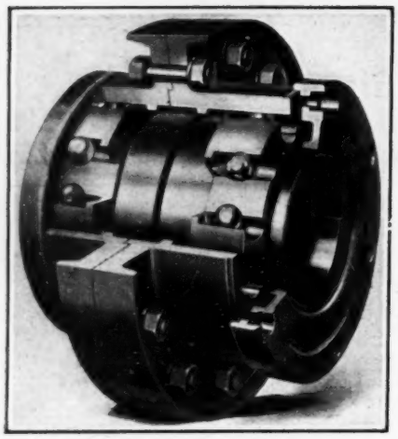
In case the wheel leaves the trolley wire and catches in something before the motorman can pull the pole down, the socket and wheel are jerked off the end of the pole and fall to the ground. After the trip is brought to a stop, the socket and wheel are retrieved and slipped back into position on the end of the pole. The long delay caused by the insertion of a new pole is entirely avoided.

The poles have been used on the 30-ton locomotive of the Keystone Coal & Coke Co. and the safety feature has operated several times most satisfactorily. Delays to the locomotive due to a broken pole or torn-down wires have ceased to hinder operation.

Transmits Power with Shafts Out of Line or Offset

In the accompanying illustration may be seen a partial cross-section of the new Sykes universal flexible coupling, manufactured in sizes from ¾ to 8 in. by the Farrel Foundry & Machine Co., Inc., of Buffalo, N. Y. This device is practically a ball-bearing, universal joint capable of transmitting motion between shafts as much as 5 deg. out of line or offset as much as 4 per cent of the shaft diameter. In either case the movement of the balls upon their races is slight, never exceeding 1/32 in. per revolution.

Simplicity of construction is a distinguishing characteristic of this new coupling. It is composed of three main members—two hubs keyable to the ends of the driving and driven shafts respectively, and a two-piece sleeve inclosing and covering the whole device. Each hub carries ball races arranged around its periphery which match similar races on the inner surface of the sleeve sections. The balls, which are of standard sizes such as are used in bearings and journals, are placed be-



Partial Cross-Section Showing Internal Construction

In this picture a portion of the two-piece sleeve has been cut away, showing the balls and the races within which they operate. Although this coupling ought to be lubricated it can run "dry" for a long time without perceptible damage.

tween or within the races thus formed.

Analysis of the action of this coupling shows that irrespective of the amount of misalignment of one shaft with respect to the other the balls always maintain line contact with the races. Lubrication of this coupling is of minor importance. Because of the large area of ball contact and the small and comparatively slow movement of the balls a thin film of grease on each is all that is necessary. In fact that coupling may be run for long periods entirely "dry" without appreciable damage.

Tube Applies Grease to Ball Bearings of Motor

Proper lubrication of motors always has been a vexatious problem. It was greatly simplified, however, through the advent of the ball-bearing motor with its inherent low bearing friction. Fairbanks, Morse & Co., of Chicago, believes that by use of a suitable grease the lubrication of such machines can be reduced to a 20-minute job once a year.

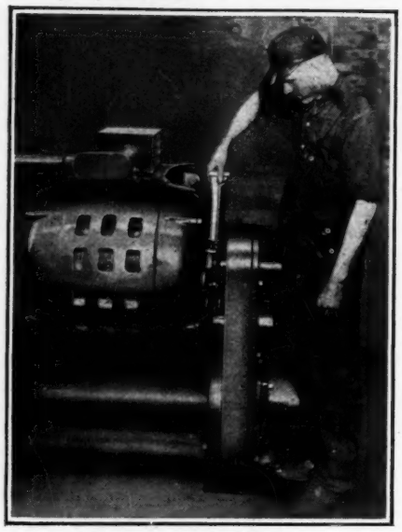
This firm recently introduced an improvement that further simplifies motor lubrication. This consists in furnishing the proper greases in collapsible tubes, each containing just enough lubricant for a motor's annual requirements.

After flushing out the old grease with kerosene the new grease is squeezed from the tube directly into the bearing. Directions show exactly how much to put into each bearing for the best results. Four sizes of tubes are available for corresponding sizes of bearings.

Many advantages inhere in this tube method of greasing. The kind of lubricant best adapted for ball-bearings is used. This is of the proper adhesiveness to cling to the balls; it maintains its consistency through all normal temperatures without being too stiff when starting in cold weather, and without melting and flowing out of the bearing when the motor is carrying full load.

The manufacturer guarantees it free from gritty or corrosive constituents and when the grease tube is used no outside dirt or other deleterious matter is likely to be introduced into the bearing. The probability that a stick or other handy object of questionable cleanliness will be used for transferring grease from an open can to the bearing is entirely eliminated. The cap of the housing is not removed; only the plug. No lubricant is wasted or smeared outside the housing, and no wiping is needed. Just the right quantity of grease for the most perfect lubrication is used in each bearing.

The makers state that it must not be assumed, because the grease is furnished in tubes, that this is an expensive method of lubrication. It is found, in practice, that the slight cost of the tubes usually is offset by the elimination of waste in the use of the lubricants. This method of greasing therefore affords both economy and convenience and maintains the efficiency of the bearing at its highest point.



Greasing by Tube

Method of using the new grease tube in lubricating ball-bearing motors. All waste is eliminated and use of a lubricant of proper consistency is assured.

Trade Literature

Power Factor and Means for Its Improvement. General Electric Co., Schenectady, N. Y. Bulletin No. 232. Pp. 33; 8x10½ in.; illustrated. Contains information, arranged in a simple and systematic manner, on means for power factor improvement in industrial plants.

B. F. Sturtevant Co., Hyde Park, Boston, Mass., has issued a 3½x6-in. four-page folder illustrating and describing its **Big Midget Portable Blower,** for blowing dust out of motors, generators and all kinds of machinery.

C-E Unit System for Burning Pulverized Fuel. Combustion Engineering Corp., New York City. Catalog U-1. Pp. 15; 8½x11 in., illustrated. Describes the burning by this system of pulverized fuel by the direct-fired method.

Conduits for Grounding Service Wire and Conduit System. Crouse-Hinds Co., Syracuse, N. Y. Bulletin No. 2085.

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has issued a 24-page publication describing **static condensers for power-factor correction.** This circular, 1670-A, includes a number of tables, charts and half-tones.

Electric Night by Radio. General Electric Co., Schenectady, N. Y. GEA-324. Pp. 55; 8 x 10½ in.; illustrated. Contains addresses broadcast on "Electric Night," relating to history, progress, public relations, etc.

The Davenport Locomotive Works, Davenport, Iowa, has issued a leaflet illustrating and describing its new 4-ton gasoline locomotive, known as the **Davenport-Fordson Locomotive.** Full specifications and a table of haulage capacities are included.

EC&M Separator Magnets. The Electric Controller & Mfg. Co., Cleveland, Ohio. Four-page folder illustrating and describing the work of the magnet.

Universal Vibrating Screens. Universal Vibrating Screen Co., Racine, Wis. Catalog No. 50. Pp. 24; 6x9 in.; illustrated. The simplicity of construction and inexpensiveness in operation of these screens are stressed in this booklet.

Green Forced Draft Stokers. Combustion Engineering Corp., 43 Broad St., New York City. Catalog GFD-1. Pp. 14; 8½x11 in.; illustrated. Describes a number of special features embodied in these stokers.

Some Developments in the Electrical Industry During 1925, by John Liston, has been issued as a 62-p. publication by the General Electric Co., Schenectady, N. Y. The publication is known as GEA-355 and covers each phase of electrical application and its outstanding developments during the past year. The book is indexed and illustrated.

Eotvos Torsion Balance. L. Oertling, Ltd., Turnmill Street, London, E. C. 1, England. Pp. 20; 6x9 in.; illustrated. Describes an instrument that works on the gravitational method and is not dependent on the personal factor for its operation. It should prove of value to the geologist.

Detroit Stoker Co., Detroit, Mich., has issued a 24-p. bulletin, No. 103, describing and illustrating its **Multiple Retort Underfeed Stokers.** The level fuel bed and the method for controlling movement of the fuel throughout the entire process of combustion are some of the illustrated features.

Climax Engineering Co., Clinton, Iowa, has issued three bulletins describing its "Trustworthy" Engines in relation to various types of driven units. Bulletin E describes its **Power Units;** bulletin F its **Engines Direct Connected to Generators;** and bulletin G the Climax **Engine Direct Connected to Centrifugal Pumps.** Tables and illustrations are included.

Homestead Valves. Homestead Valve Mfg. Co., Homestead, Pa. Catalog No. 33. Pp. 51; 6x9 in.; illustrated. This catalog should interest industries using water, air steam, acids, oils, heavy liquids, oil residue, etc.

Sangamo Meters. Sangamo Electric Co., Springfield, Ill. Bulletin No. 71. Pp. 19; 8x10½ in.; illustrated. Contains instructions for Sangamo type D-5 watthour meters.